PRIVILEGED AND CONFIDENTIAL ADDITIONAL ENVIRONMENTAL INVESTIGATION ROTH BROS. SMELTING CORP. - PLANT 2 EAST SYRACUSE, NEW YORK

SECTION 2 OF 2

by

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for

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H=A

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EXECUTIVE SUMMARY

This section of the report presents the results of the additional environmental investigation at the Roth Bros. Smelting Corp. - Plant 2 site in East Syracuse, New York. The intent of the investigation was to continue investigation of Plant 2 and further evaluate several site areas for potential presence and extent of hazardous materials previously identified in H&A's initial environmental investigation, as summarized in Section 1.

H&A's initial investigation identified several Plant 2 areas for additional study. The additional environmental investigation objectives in each area were to evaluate the presence of selected oil and/or hazardous substances associated with the area; apparent extent of the substances; and potential remedial alternatives for areas found to contain the substances. Specific areas of investigation included: 1) an equipment maintenance area and associated underground tanks for petroleum product release; 2) an area of fill (paved and unpaved) north of Plant 2 which showed elevated lead and PCB levels in selected areas in the initial investigation; 3) a baghouse/hazardous waste storage area, again where previous sampling showed elevated lead and PCB concentrations; and 4) associated drainageways associated with the fill and baghouse areas.

This additional investigation included the installation of 93 shallow test borings, 12 observation wells, and 2 test pit trenches. Fifty-eight soil samples were collected and analyzed for total lead, TCLP lead and PCBs. Ten soil samples were collected and analyzed for total organic carbon and cation exchange capacity. In addition, 17 samples (soil, baghouse dust and emission particulate) were collected and submitted to the University of Rochester for lead isotopic analyses to assist in evaluation of lead sources. Groundwater from each of the observation wells was collected and analyzed for aluminum, calcium, iron, potassium and lead (both total and dissolved metals) and PCBs. Two groundwater samples were also analyzed for total petroleum hydrocarbons from the maintenance shop tank area.

Results of analyses performed on samples collected during the additional investigation indicate the following:

Maintenance Shop Area

o Four soil borings, two of which were converted to groundwater monitoring wells, did not indicate the significant presence of petroleum related compounds. Total petroleum hydrocarbon (TPH) analyses were performed on



groundwater samples from the wells and 4.52 ppm TPH was detected in one well. It is H&A's opinion this concentration is not indicative of free petroleum or significant dissolved petroleum in the samples.

Some petroleum staining in soil was evident in our initial investigation in this area. Under current NYSDEC policy, if such soils require excavation and removal from the site (such as for foundation construction), special handling or disposal requirements may apply. If such work is undertaken in the future in this area H&A recommends Roth Bros. check on applicable criteria for petroleum residues in soils.

Fill and Baghouse Areas

- Total lead concentrations detected in soil samples were above the comparison criteria (based on a review of USEPA Records of Decisions and NYSDEC's responses for remediation at other sites) of 500 ppm at several locations in the Fill and Baghouse areas. These areas may require remedial action.
- o TCLP lead concentrations were detected in soil samples at concentrations above the 5.0 ppm EPA regulatory limit in several soil sample locations in the Fill and Baghouse areas. These samples are, therefore, characteristically hazardous by this method and may require remedial action.
- o PCBs were detected in several samples in the Fill and Baghouse areas above the EPA PCB Spill Cleanup Guidance Concentration 25 ppm and may require remedial action.

Samples with high lead concentrations also frequently exceeded the TCLP regulatory limit. Several of the samples with high PCB concentrations also had high lead concentrations.

<u>Groundwater</u>

Twelve wells were installed across the site to determine groundwater flow direction and to collect samples at both upgradient and downgradient locations.

Evaluation of groundwater for potential presence of smelter related compounds derived from the fill and baghouse areas was performed by sampling for possible smelter-specific compounds (lead, PCBs) as well as indicator parameters to evaluate effects of sediment in samples (iron, calcium, aluminium, potassium and leachability (pH).



Lead was detected in one groundwater sample (filtered for soluble lead) at 0.117 ppm during an initial sampling round. The lead presence may have been due to turbidity in the groundwater, therefore the well was redeveloped to reduce the turbidity. A second sampling event, following redevelopment of the well, indicated a concentration of 0.0142 ppm dissolved lead, below the NYS Class GA (protected for drinking water source) groundwater quality criteria of 0.025 ppm.

Iron (dissolved) was detected in groundwater in B278-OW, B279-OW and B290-OW at concentrations above the NYS water quality criteria of 0.300 ppm. The criteria is an aesthetic-based, not health-based, criteria. Concentrations of 1 to 5 ppm dissolved iron in groundwater are common, indicating the concentrations detected on site fall within the common range, with one exception. B279-OW, in the fill area, had a concentration of 8.75 ppm iron. The high iron may be due in part, to natural conditions in the groundwater.

In summary, it does not appear the groundwater has been adversely impacted by the presence of fill at the site. Additionally, based on the apparent groundwater flow direction and the results of groundwater analyses, it is unlikely there would be off-site migration of metals in groundwater.

Remedial Action

Based on site observations and sampling, it appears several areas of soil/fill material and sediments in the Fill and Baghouse areas (an estimated total of 19,500 tons) may require remedial action for the presence of lead (TCLP and total) and PCBs. Based on the observed groundwater flow direction and analyses of groundwater collected downgradient from the affected soils, it does not appear the groundwater will require remedial action.

Based on H&A's evaluation, immediate remedial action on site is not necessary for the following reasons. The lead/PCBs are not migrating to groundwater despite being in place for up to 12+ years (based on former storage in the area from 1976 to 1979). The lead/PCBs concentrations which exceed regulatory criteria in soil/fill appear to be confined to that medium. There is no evidence that lead/PCB concentrations have migrated offsite. It is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity. Public access to the affected area is restriced, and plant use is limited to occassional plant personnel visits to take hardware in and out of storage. Therefore, no significant threat to site or public health exists.



H&A of New York was requested to evaluate remedial alternatives and therefore reviewed six remedial action alternatives including no action, in-situ solidification, silicate stabilization, capping in-place, off-site landfill disposal, and in-situ vitrification. The alternatives were reviewed for applicability to the site, potential effectiveness, performance and cost. Based on an initial review of the six remedial alternatives, if remediation is to be performed H&A recommends the capping-in-place alternative.

This alternative is considered reliable technology and will effectively reduce infiltration into and flow-through of water in the fill materials, thereby significantly reducing the likelihood of migration of the compounds of concern. Capping reduces the potential for exposure by migration and contact routes. Additionally, the capping-in-place alternative is the most cost effective measure for remediation.

Based on surface and sediment sampling in the paved baghouse/scrap storage area, it appears lead dusts from current operations are present on pavement surface areas as well as in the surface-water drainage system along the western property boundary. H&A recommends housekeeping practices be reviewed and revised to prevent future deposition of baghouse dusts in these areas. The surface of the paved areas should be cleaned, and wastes generated from the cleaning be handled/disposed appropriately. Sediments within the storm sewer pipe should be flushed out, collected and properly disposed. It may be possible to incorporate sediments from this cleaning in the stabilization/capping remediation of the fill & baghouse areas as described above. H&A recommends confirmation sampling of the paved area and the drainage pipe be conducted following the clean-up actions.



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I. <u>INTRODUCTION</u>

This document is a report on the performance and results of an additional site investigation of the Roth Bros. Smelting Corporation (Roth Bros.) Plant 2 in East Syracuse, New York. The investigation was performed to assist Nixon, Hargrave, Devans & Doyle (NHDD) and Roth Bros. in evaluating the potential presence of oil and hazardous materials on-site. H&A of New York previously conducted an initial investigation (contained in Section 1). The results of the initial investigation identified several areas of concern as requiring further investigation on the Plant 2 property.

The purpose of the additional environmental investigation was to determine the potential presence of oil and hazardous materials and their apparent areal extent. Potential remedial alternatives for the affected areas were then reviewed in light of the compounds detected. Four general areas of study were identified including 1) an equipment maintenance/underground petroleum tank storage area for potential presence of petroleum products in soil and groundwater; 2) an area of fill (paved/unpaved) north of Plant 2 which showed high concentrations of lead and PCBs in soil in the previous investigation; 3) a smelter dust baghouse/hazardous waste storage area, again for potential presence of lead and PCBs; and 4) drainageways associated with the fill and baghouse areas.

This document briefly summarizes relevant existing information from the initial investigation regarding the potential presence of oil and hazardous materials on the Plant 2 site. The report outlines the additional work scope items and quality assurance procedures utilized to evaluate and characterize the nature and extent of compounds in soil, groundwater and sediment at the site potentially associated with smelting activities. The additional environmental investigation consisted of a limited subsurface investigation including test borings; test pit explorations; groundwater observation well installations; limited sampling and laboratory analyses of soil, fill and groundwater; and a limited evaluation of potential remedial activities. These activities are described in greater detail in the following report sections.



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II. SITE LOCATION AND CURRENT CONDITIONS

The site location, current conditions and site operations are described in H&A's initial environmental investigation report, contained in Section 1.



III. PREVIOUS INVESTIGATIONS

H&A of New York conducted an initial environmental investigation for NHDD. This initial investigation was intended to evaluate several potential source areas of oil and hazardous materials at Roth Bros. Plant 2. The results may be found in Section 1 of this report.

<u>Summary</u> - In summary, two occurrences of oil and hazardous materials were identified during the initial investigation. Oil stained soils were observed in the maintenance area, but appeared to constitute a solid waste. Since the soils do not currently require excavation for construction or other projects, leaving them in place would be consistent with current NYSDEC policy. However, presence of free product petroleum on groundwater would require remediation and therefore recommendations were made to evaluate this condition, as described above.

Fill and sediment which appeared to be characteristically hazardous by TCLP lead criteria and/or the presence of PCBs above 25 ppm is present in two areas of the plant, the fill area north of Plant 2 and the Baghouse/Outfall 001/Dross area (hereinafter Baghouse area). In order to evaluate the need to remediate or remove the materials from the site, additional study was determined to be required to better determine the source(s), apparent extent and whether groundwater had been affected.



IV. SUBSURFACE INVESTIGATIONS

The purpose of the additional study has been to continue the assessment of the Plant 2 site in accordance with the recommendations outlined during the initial investigation. The subsurface exploration program developed for this investigation consisted of test borings, test pits and observation well installations.

Explorations were conducted between 24 October and 6 November 1990 and 22 January 1991 by Parratt-Wolff, Inc. of Syracuse, New York, under the observation of H&A of New York personnel. Exploration locations are shown on Figure 2; test boring reports and test pit reports are presented in Appendices A and B, respectively.

Brief discussions of the subsurface explorations conducted and the fill conditions encountered for each area explored are presented below. Native materials encountered below the fill were generally composed of lacustrine sand and silt overlying glacial till. In some instances, there was an absence of lacustrine materials.

Groundwater conditions were evaluated with the installation of 12 observation wells across the site including both upgradient and downgradient locations. The wells were surveyed and groundwater flow direction determined. Wells were sampled, and groundwater submitted for analyses (see Section 4-06).

4-01. MAINTENANCE AREA

A total of four (4) test borings, designated B287 through B290 were drilled in the maintenance area on the east side of the Plant 2 buildings. This area was previously noted to have elevated concentrations of oil and grease in the soils. Fill was encountered to depths ranging from 1.5 to 3.5 ft. and typically consisted of sandy gravel. Black staining in the fill and black stained cinders were noted in two of the four borings (B288 and B289).

4-02. PAVED FILL AREA

A total of 53 shallow test borings, designated B201 through B252 and B277, were drilled in the paved fill area at the north end of Plant 2. This area was observed in aerial photographs to possibly have received fill in the past. A grid pattern of boring locations was established in accordance with USEPA guidance for screening of unknown fill areas. The borings were laid out in an approximate 50 ft. x 50 ft. grid pattern in order to maximize coverage of the area. Borings were drilled to depths ranging from 2.5 to 8.0 ft. depending on encountered fill depth. Boring locations are shown on Figure 2.



Fill was encountered to depths ranging from 0 to 6.5 ft. (Table I). In two instances (B234 and B242), the bottom of the exploration was at 5.0 ft. and the base of the fill had not yet been encountered. Fill thicknesses in nearby test borings ranged from 0.5 to 7.8 ft. The average fill thickness encountered in the paved fill area was 3.1 ft. The ground surface typically consisted of a concrete and/or blacktop surface with gravel sub-base. Below the paved surface, fill was variable in composition, including silt, sand and gravel, cinders, wood fragments, glass and ash.

4-03. UNPAVED FILL AREA

A total of three (3) test borings and two (2) test pit trenches were excavated in the unpaved fill area north of Plant 2 (Figure 2). (This is in addition to 18 test pits conducted in this area in the initial investigation). The additional explorations were conducted to further evaluate the fill with high TCLP lead and PCBs encountered in the initial investigations by H&A. The test pit trenches were designated TP201 and TP202 (Appendix B); the borings, designated B278, B279 and B292, were converted to observation wells (Appendices A and C).

TP201 and TP202 were 35 and 20 ft. in length, respectively. They were excavated in a north-south direction in an effort to locate a former ditch that crossed this area observed in aerial photographs. In TP201 a dark brown organic silt at 2.5 ft. depth was observed near the southern end of the trench. This material may represent sediment from the base of the former ditch prior to fill activity.

Fill was encountered to depths ranging from 2.0 to 3.0 ft. The fill material typically consisted of sandy silt, with gravel, wood and metal fragments, ash and brick pieces. Native materials underlying the fill consisted of lacustrine silts and sands.

4-04. BAGHOUSE/SCRAP STORAGE AREA

A total of 24 shallow test borings, designated B253 through B276, were drilled in the paved area used for scrap storage and hazardous waste storage, east and northeast of Plant 2 buildings (Figure 2). This area was also observed in site photographs to be disturbed and may have received some fill. A 50 ft. x 50 ft. grid pattern was established for the boring locations. Due to physical obstructions, the grid was altered slightly toward the southern end of the grid.



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Fill was encountered to depths ranging from 0 to 7.8 ft. Fill was not encountered beneath the pavement in six (6) of the test borings. The average fill thickness encountered was 2.1 feet. Concrete pad or blacktop surface with a gravel sub-base was typically encountered at the ground surface. Below the paved surface, fill typically consisted of a sandy silt with gravel.

4-05. NATIVE SOILS

Three (3) test borings were placed in native soils at the north end of the unpaved fill area. The borings, designated B280, B291 and B293, were converted to groundwater monitoring wells to evaluate water quality north of the fill area.

4-06. WELL INSTALLATION

4.6.1 Well Installation

Wells were installed in the boreholes of test borings B273, B277, B278, B279, B280, B281, B286, B287, and B290 through B293. Wells are designated by the test boring number plus the suffix -OW. Well installation reports and the accompanying groundwater level monitoring report are contained in Appendix C.

In order to construct each well a 2.0 inch diameter Schedule 40 PVC screen (slotted 0.010 in.) and riser pipe were installed in the borehole. Quartz sand was placed in the annular space between the pipe and the side of the borehole to a distance of 0.2 to 2.5 ft. above the top of the well screen.

A bentonite pellet seal was placed above the sand pack and cement grout was placed in the well annulus throughout the remaining distance to the ground surface. For wells with a flush mounted casing, a quartz sand layer was placed between the top of the bentonite seal and the base of the concrete surface seal to aid in dispersing surface runoff that may collect in the protective casing.

A locking steel protective casing was placed over the completed well, except for flush-mounted wells which were equipped with a locking cap on the PVC riser.

4.6.2 Well Development

Wells were developed by Parratt Wolff Drilling for a minimum of one hour or until measurements on a portable nephelometric turbidity meter were 50 Nephelometric Turbidity Units (NTUs) or less for groundwater. Wells B278-OW and B279-OW were re-developed on 24 January 1991. These wells were resampled in January along with the sampling of B291-OW, B292-OW and B293-OW.



4.6.3 Groundwater Potentiometric Levels

The groundwater wells installed on site provide data as to the groundwater flow direction through measurements of the groundwater potentiometric levels. Groundwater level measurements were obtained from the twelve wells installed on-site. An electronic depth indicator sounder was used to collect measurements of the groundwater surface in the well to the nearest 0.05 ft. from the top of the PVC or top of the steel protective casing at the well. The date, time and measurements were recorded in a field log and the data transferred to the Groundwater Monitoring Reports (Appendix C).

Nine wells were surveyed by Survey Systems of Syracuse, New York, on 21 November 1990. B291-OW, B292-OW and B293-OW, installed subsequent to the other nine wells, were surveyed by Survey Systems on 7 February 1991. Surveyed elevation results were referenced to the National Geodetic Vertical Datum (NGVD) elevation and reported to an accuracy of 0.01 ft. The groundwater elevations were used to generate the potentiometric surface map presented in Figure 3.

The groundwater flow is generally in a northeasterly direction to apparent discharge points along the surface water drainage channel located at the east boundary of the property, and to the south branch of Ley Creek, north of the site.

Based on observations of water accumulating in test pits, and the fine-grained nature of fill and native soils encountered, it is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity.

Results of the groundwater analyses conducted on site are discussed in Sections 5-05, 5-06, and 5-07.



V. CHEMICAL ANALYSES

5-01. SAMPLE LOCATIONS, COLLECTION AND HANDLING

Sample locations are shown on Figure 2. Summaries of the test boring, test pit and environmental sampling are presented in Tables I and II.

In the two grid areas (the paved fill area and the baghouse/scrap storage area), approximately 63 percent of the borings were randomly pre-selected using random number generation to identify the borings which would be sampled for lab analyses. Random selection by this method is recommended USEPA procedure for screening uncontrolled fill areas, as it prevents bias in the sample selection process (13).

5.1.1 Soil and Sediment Sampling

Samples were collected continuously in each boring. Test borings were advanced using 4-1/4 inc. I.D. hollow stem augers in accordance with ASTM method D1586-84. Samples were described using the Modified United Soil Classification System. Soil samples were collected from the split spoon after drilling to the desired sampling depth. The split spoon was decontaminated between each sample point using an alconox wash, deionized water rinse, methanol wipe and final deionized water rinse.

Sediment samples were collected from three storm sewer manholes along the western property line. Samples were collected by lowering a stainless steel cup mounted on a pole into the sediment. The stainless steel cup was decontaminated between sampling points, as described above.

Surface samples of native soils were collected from two locations within the wooded area north of Plant 2. A shovel was used to excavate below a 4± inch layer of organic topsoil and a stainless steel spoon to collect the soil sample. Both the shovel and the stainless steel spoon were decontaminated between sampling locations, as described above.

Soil samples from test pit trenches were obtained from the sides of the excavation at the desired depth using a stainless steel spoon. The stainless steel spoon was decontaminated between sampling points as described above.



Samples were mixed thoroughly in a stainless steel bowl in order to homogenize sample splits submitted for analyses. The bowl and spoon used for mixing were decontaminated between samples. Soil/sediment samples were analyzed for total lead, TCLP lead and PCBs. Subsets of the samples were also analyzed for Total Organic Carbon and cation exchange capacity to evaluate possible correlation of these factors with high leachable lead levels.

5.1.2 Groundwater Sampling

Sampling of groundwater from the observation wells was conducted on 9 November 1990, and 24 and 25 January 1991 by H&A of New York personnel. Wells were purged using disposable bailers and water levels were recorded prior to purging. A minimum of four well volumes were removed from each of the wells.

Groundwater was sampled for PCBs (by EPA Method 8080) and five metals (aluminum, calcium, iron, potassium and lead), including both field filtered (soluble) and non-filtered (total) samples. Equipment used to filter the samples in the field include a peristaltic pump, disposable 0.45 micron filters, and disposable tubing.

5.1.3 Sampling Handling

A chain-of-custody form was completed following sample collection and copies are included in Appendix D with the laboratory data.

Exterior surfaces of sample jars and bottles were wiped clean with paper towels after sample collection, and glass containers were wrapped in "bubble" wrap to prevent breakage. Samples were shipped to the analytical laboratory under chain-of-custody in coolers containing ice in sealed plastic bags to maintain a 4°C sample storage temperature.

5-02. QA/QC PROCEDURES

Quality assurance/quality control (QA/QC) measures were followed for field collection and laboratory analyses of samples obtained at the site.

For soils, two field blind-duplicate samples were collected for the paved fill area and for the baghouse scrap storage area.



Field duplicate sample analytical results are presented in Table III with the site analytical results. Sample duplicates for soils are as follows:

- o paved/fill area B201 and B210
- o baghouse/scrap storage area B253 and B263

For groundwater field duplicate samples are as follows:

- o November 1990 sampling event: B277-OW
- o January 1991 sampling event: B279-OW

Field cleaning blanks (rinsate blanks) were collected using the same handling techniques as other samples. Deionized water, supplied by General Testing Corp., was poured over the sampling implement following decontamination. Field blanks are used to assess the potential introduction of contamination during sample collection and analyses.

5-03. LABORATORY CHEMICAL ANALYSES RESULTS

Soil, sediment and groundwater samples, as well as rinsate blanks, were submitted to General Testing Corporation for laboratory analyses. A summary of laboratory analytical results for the 58 soil/fill samples is presented in Table III. The analytical results and chain-of-custody records are presented in Appendix D. Soil/fill samples were analyzed for total lead, TCLP lead and PCBs (by EPA Method 8080). Selected samples were submitted for lead isotopic analyses to evaluate potential lead sources (see Section 5-04). In addition, total organic carbon (TOC) and cation exchange capacity (CEC) analyses were performed on subsets of the soil samples. A discussion of the TOC and CEC results may be found in Section 6-01.

Concentration criteria were selected to allow comparison of detected lead and PCB values at various sample locations. Such criteria were identified as follows:

- o Lead the USEPA has established a concentration of 5 ppm or greater lead present in leachate from the Toxicity Characteristic Leaching Procedure (TCLP) analysis as the basis for determining characteristically hazardous lead waste (greater than or equal to 5 ppm) from non-hazardous (less than 5 ppm).
- o The EPA has not currently established a total lead standard for soil, however, an action level of 500 ppm has been reported at cleanup sites under review by NYSDEC (14). A 1000 ppm action level has been reported at Superfund sites, in EPA's biogenetic model, in Center for Disease Control



policy and by the State of Minnesota (temporary standard) (4). To be conservative and in line with potential NYSDEC requirements, the 500 ppm concentration was used as a comparison criteria.

o PCBs - the USEPA has established a range of total PCB concentrations, based primarily on land use and potential for human exposure as a basis for comparing PCB data. Concentrations less than 10 ppm total PCB are generally considered acceptable at most locations. A range between 10 and 25 ppm is considered acceptable depending on land use; 10 ppm is the comparison criteria where residential/commercial land use prevails and 25 ppm (or lower) is generally acceptable in industrial areas. Since the site is an industrial site and is surrounded by industrial use, Table III highlights sample values above 25 ppm.

5.3.1 Paved/Fill Area

In the paved area north of the Plant 2 buildings, 15 out of 37 samples had lead (total) concentrations higher than a 500 ppm comparison criteria used for this investigation (Table III). Locations of the materials where these values clustered were observed consisted of three general locations. The total lead concentrations are higher on the west side of the railroad spur near the Plant 2 building; at the north edge of the paved area; and along the east edge of the paved area and property line near the railroad tracks.

The TCLP lead concentrations in the paved area exceed the 5.0 ppm EPA regulatory level in 8 sample locations (Table III). Seven of these were also found to coincide with high lead concentration areas described above. Although the correlation between high lead (total) and high TCLP lead does not hold true for all samples tested, the high TCLP values were found to correspond with high lead areas just west of the railroad spur near the Plant 2 building; at the north edge of the paved area; along the east edge of the paved area; and at the west edge of the paved area.

B239 was sampled at two consecutive depths (1.0-3.0 ft. and 3.0-5.0 ft.). The analyses indicate a higher concentration with increasing depth for both total and TCLP lead. The composition of the material in the deeper sample was observed to contain cinders and wood fragments. Conversely, in borings where native soil was sampled and analyzed (B253, B254) relatively low lead concentrations and non-detect TCLP lead values were found.



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Within the paved fill area, PCBs were detected in 35 out of 37 soil/fill samples (Table III). The PCBs detected were primarily Arochlors 1248 and 1254; four samples contained Arochlor 1232; and one sample contained Arochlor 1242. Of the samples analyzed, three had total PCB concentrations in excess of the 25 ppm regulatory criteria. Concentrations of those in exceedance of the criteria range from 31.2 ppm to 82.7 ppm. The higher levels of PCBs were detected primarily along the east side of the paved fill area near the eastern property boundary.

5.3.2 <u>Baghouse/Scrap Storage Area</u>

In the paved scrap storage area and near the hazardous waste storage along the west side of Plant 2, 2 out of 16 samples had concentrations in exceedance of 500 ppm (Table III). Only one sample (B264-S1) had high lead concentration (29,600 ppm) in the aluminum scrap storage yard. A layer of black ash was observed from 1.1 to 1.5 ft. in B264. Sample B274-S1 located near the hazardous waste storage area also had a high lead level (2,980 ppm). Fill in B274 was observed to consist of gravelly coarse to fine sand with wood fragments.

TCLP lead was reported as non-detect in 15 out of 16 samples from the paved area (Table III). B264-S1 had a TCLP lead concentration of 189 ppm. As indicated above, B264 also had a high total lead concentration. The composition of the soil matrix in B264 was observed to contain a layer of black ash from 1.1 to 1.5 ft.

PCBs were detected in 12 out of 18 samples analyzed in the baghouse/scrap storage area (Table III). Concentrations ranged from non-detect to 4.95 ppm, below the comparison criterion of 25 ppm for PCBs in soil. Arochlors 1248 and 1254 were detected in the samples.

5.3.3 LBS-3 Area

Four borings (B282 through B285) were drilled and sampled in the vicinity of the LBS-3 sample location, adjacent to the lead baghouses on the west side of the fenceline (Figure 2). High lead (total) and TCLP lead were found in the four samples collected and analyzed. Total lead concentrations range from 1530 to 23,740 ppm (Table III). TCLP lead concentrations range from 12.2 to 22.7 ppm. Samples from this area were observed to consist of a sandy silt with little to trace gravel and trace organic material.



VIII. CONCLUSIONS AND RECOMMENDATIONS

Based on the scope of work performed for this investigation, the following conclusions and recommendations with respect to potential occurrence of oil and hazardous materials at this site have been made.

Paved and Unpaved Fill Area: Two primary areas were identified on site with high total lead (>500 ppm) and/or high TCLP lead (>5.0 ppm) concentrations in the soil/fill materials and in sediments in the outfall ditches 001 and 002. PCBs were also detected in one of these areas. In addition, spotty occurrences of high total and/or TCLP lead exist around the fill area northwest of Plant 2. An estimate of the soil/fill and sediment contained in these areas indicates 19,500 tons of material may be affected. Based on the investigation conducted to date, the lead and PCBs have not migrated to groundwater or off site; site access is restricted; and the lead and PCBs appear to be primarily contained within the soil/fill material. Further, it is likely that the fill and immediately underlying soils would exhibit low hydraulic conductivity. Therefore, there is not an immediate need for remedial action at the site. At your request, H&A conducted a preliminary review of six potential remedial alternatives to address the lead and PCBs if and when Roth elects to undertake remedial action. The alternatives reviewed include the no-action alternative, silicate stabilization, in-situ solidification, capping in-place, removal and off-site disposal and in-situ vitrification. Based on a review of the six remedial alternatives, H&A recommends the capping-in-place, at such time as Roth Bros. elects to proceed with a remedial action. This alternative is considered reliable technology and will effectively seal off the contamination, thereby minimizing the likelihood of migration of the compounds of concern. Through isolation, the toxicity of the affected soils is reduced. Additionally, the capping-in-place alternative is the most cost effective measure for remediation.

Baghouse/Scrap Storage Area: Based upon a review of surface sampling and sediment sampling on the Plant 2 property, it appears lead dusts from current operations are present on the paved surface area as well as in the surface water drainage system located along the western property boundary. H&A recommends the current housekeeping practices, including storage/handling baghouse dusts, be reviewed and revised to prevent accumulation and runoff of dusts and debris from these areas. In addition, the paved areas should be cleaned and waste material derived from the cleaning be handled accordingly. Sediments which have collected in the underground drainage pipe along the western boundary should also be flushed out, collected and properly disposed. H&A recommends confirmation sampling of



the paved area and the drainage pipe be conducted following the cleanup actions. It may be possible to incorporate the treatment of the sediments collected during cleaning of this area into remediation of the soil/fill.

<u>Maintenance Area</u>: Two observation wells were installed in the maintenance area to evaluate groundwater for the potential presence of free and dissolved petroleum hydrocarbons.

Petroleum hydrocarbons were detected in one of the wells at 4.52 ppm by the infrared method, however, they were not detected above the laboratory detection method by the gas chromatograph method. No free product petroleum was observed. Based on the single low concentration detected and the observations made, it does not appear the petroleum hydrocarbons are significantly affecting groundwater at the location sampled. No further investigation or action is recommended.

H&A's prior investigation had noted petroleum straining as present in some soils exposed in test pits in the maintenance area. It is H&A's understanding that unless such soils need to be excavated and handled for site construction or other purposes, they may remain in place under current NYSDEC policy. If however they are excavated they may need to be handled as a special solid waste. We recommend Roth be cognizant of this in planning work/construction in the Maintenance Area.

Regarding groundwater conditions, twelve groundwater observation wells were installed across the site, and groundwater samples collected and analyzed. Based on the observed groundwater flow direction and analyses of groundwater collected downgradient from the affected soil/fill areas, it does not appear the groundwater will require remedial action. Based on the groundwater flow direction and results of analyses conducted for on-site groundwater, it appears unlikely there would be offsite migration of metals in the groundwater.



IX. CLOSING

9-01. <u>LIMITATIONS</u>

The conclusions provided by H&A of New York are based solely on the work conducted and sources of information referenced in this report. Any additional information that becomes available concerning this site should be provided to H&A of New York so that our conclusions may be revised and modified as necessary.

The work performed by H&A of New York is subject to the terms and conditions of our Agreement with NHDD. Finally, this work has been undertaken in accordance with generally accepted consulting practices, including the specific USEPA guidelines and ASTM methods referenced in this report. No other warranty, express or implied, is made.

9-02. CONSULTANT'S STATEMENT

I state that I have personally examined and am familiar with the information submitted in Sections 1 and 2 of this Final Report. Based upon my own knowledge and upon my inquiry of those individuals responsible for obtaining the information presented, the foregoing information is true, accurate and complete based upon the scope of work performed, as described in the Agreement between H&A of New York and NHDD. I am aware that this information is being requested for the purpose of determining compliance with local, state or federal laws and may be submitted to appropriate governmental regulatory agencies for those purposes. I am aware that there are significant penalties for submitting false information to such agencies, including the possibility of fine and imprisonment.

Elizabeth D. Henderson Staff Env. Geologist

Vincent B. Dick

Senior Env. Geologist

EDH: VBD: LPS:slf

vbd31030

Lawrence P. Smith, P.E.

Partner



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TABLE I ROTH BROS. SMELTING CORP. SUMMARY OF SAMPLE COLLECTION

(Page	1	of	21

LOCATION	EXPLORATION	FILL	SOIL	DUPLICATE	METALS, PC8s	LEAD	TOTAL ORG.	
	NUMBER	DEPTH (FT.)	SAMPLE		ANALYSES	ISOTOPE	CARBON	EXCH CAPACITY
PAVED FILL AREA	B201	0-3.0	Х	x	×			
	B202	0-3.4	X		×			
	B203	0-3.2						
	B204	0-3.3						
	B205	0-4.1	X		X			
	B206	0-3.1	X		×			
	· B207	0-3.0						
	B208	NE						
	B209	0-3.5	X		×			
	B210	0-3.0	X	X	x			
	B211	0-2.0						
	B212	0-3.1	X		×			
	B213	0-2.5	X		×			
	B214	0-2.8	X		×			
	B215	0-2.8	X		×	X	×	X
	B216	0-3.0	X		×			
	B217	0-2.5	X		x	X	×	X
	B218	0-3.5	X		×			
	B219	0-2.0	X		X			
	B220	0-2.7	x		×	X		
	B221	0-2.3	X		×			
	B222	0-2.1	^		••			
	B223	0-2.7	×		×			
	B224	0-3.0	^					
	B225	0-3.0	x		×			
	B226	0-2.5	x		×			
	B227	NE.	^	•	^			
	B228	0-1.2	×		×	×	X	x
	B229	0-3.5	x		x			
	B230	0-3.0	^		^			
	B231	0-3.3	x		x			
			^		^			
	B232	0-2.6	x		×			•
	B233	0-2.7 0-5.0**	x		x			
	B234		^		^			
	B235	0-4.4						
	B236	0-2.4	~		×			
	B237	0-4.8	X		x			
	B233	0-3.2	X X		x			
	B239	0-5.1	^		^			
	B240	NE	v		×			
	B241	0.6.0	X		^			
	B242	0-5.0**	v		×			
	B243	0-5.2	X		^			
	B244	0-6.0	v		X			
	· B245	0-3.5	X					
	B246	0-4.3	X		Х . Х			
	B247	0-3.5	X		*			
	B248	0-2.0						
	B249	0-2.0	U		~			
	B250	0-2.5	X		×			
	B251	0–3.0	X		×			
	B252	0-6.5	X		×			
	B277-OW	0-0.5					_	

H & A OF NEW YORK ROCHESTER, NEW YORK

FILE NO.

TABLE I ROTH BROS. SMELTING CORP. SUMMARY OF SAMPLE COLLECTION

(Page 2 of 2)

LOCATION	BORING	FILL	SOIL	DUPLICATE	METALS, PCBs	LEAD	TOTAL ORG.	CATION
	NUMBER	DEPTH (FT.)	SAMPLE		ANALYSES	ISOTOPE	CARBON	EXCH CAPACITY
BAGHOUSE AREA	B253	NE	X	x	X			
	B254	NE	X		X			
	B255	NE						
	B256	0-7.8						
	B257	NE						
	B258	0-2.3						
	. B259	0-3.0						
	B260	0-2.0	X		X			
	B261	0-2.0						
	B262	0-2.1						
	B263	0-1.5	X	×	X			
	B264	0-1.9	X		X			X
	B265	0-2.3	X		X			
	B266	0-1.3	X		X			X
	B267	NE						
	B268	0-3.0	X		X			
	B269	0-2.4	X		X			
	B270	NE						
	B271	0-3.0						
	B272	0-2.8	X		X			
	B273-OW	0-5.3	X		X			
	B274	0-1.8						
	B275	0-2.5	x		x			
	B276	0-3.3	x		x			
FILL AREA	B278-OW	0-3.0	×		x			
	B279OW	0-2.0						
	B280-OW	0-1.0						
SOUTHWEST END OF PLANT 2	B281-OW	0-2.2						
LBS-3 AREA	B282	0-2.0**	x		x		χ .	×
	B283	0-2.0**	X		X			
	B284	0-2.0**	X		X		×	X
	B285	0-4.2**	x		X			
NEAR OUTFALL 001	B286-OW	0-0.5						
MAINTENANCE AREA	B237-OW	NE						
	B288	NE						
	B289	0-3.5						
•	B290-OW	0-2.3						
TRENCHES IN FILL	TP201	0-1.5	×		x		×	х
AREA	TP202	0-3.5	×		X ,		×	X
STORM SEWER	SDS-1-6		x		X		x	
DISCHARGE .	SDS-1-7		X		X		X	
	SDS-1-8		X		X		×	

NOTES:

- 1. -OW indicates observation well installed in completed borehole.
- 2. See Appendix A for Test Boring Reports.
- 3. See Tables III and IV for summary of laboratory analytical results.
- 4. * Indicates sample collected from storm sewer manholes.
- 5. NE = Fill was not encountered in the exploration.
- 6. ** Indicates bottom of fill was not encountered during exploration.

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TABLE II ROTH BROS. SMELTING CORP. LEAD ISOTOPE SAMPLE SUMMARY

LOCATION	SAMPLE	LEAD	REMARKS
	NUMBER	CONCENTRATION	
PAVED FILL AREA	B215	6220 PPM	ORIGINAL SAMPLE, pH 8.7
	B215	7.88 PPM	LEACHATE, pH<2
	B217	33.4 PPM	ORIGINAL SAMPLE, pH 9.4
	B217	ND	LEACHATE, pH<2
	B220	3740 PPM	ORIGINAL SAMPLE, pH 9.3
	B220	0.79 PPM	LEACHATE, pH<2
	B228	10300 PPM	ORIGINAL SAMPLE, pH 9.5
	B228	29.2 PPM	LEACHATE, pH<2
NATIVE SOIL	NGB-1	6 PPM	ORIGINAL SAMPLE
	NGB-2	15 PPM	ORIGINAL SAMPLE
LEAD DUST COMPOSITE	LDC-1	approx. 20%	LEAD DUST COLLECTED FROM HAZ, WASTE STORAGE BINS IN BAGHOUSE ALONG WEST PROPERTY BOUNDARY.
			IN BAGHOUSE ALONG WEST PROPERTY BOUNDARY.
STACK SAMPLE	STACK#1	NAV	STACK SAMPLES WERE COLLECTED BY UPSTATE LABORATORY
	STACK#2	NAV	ON GLASS FIBER FILTERS WITH A 99.98% COLLECTION
	STACK#3	NAV	EFFICIENCY DOWN TO PARTICLE SIZE OF 0.3 MICRONS.
	STACK #4	NAV	
	STACK #5	NAV	
	FILTER BLANK	NAV	BLANK FOR QUALITY CONTROL

NOTES:

- 1. NAV = Data not aavailable.
- 2. PPM = Part per million.
- 3. See Table V for lead isotopic analyses data; see Figure 5 for plot of data.

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FILE NO.

TABLE III ROTH BROS. SMELTING CORP. PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA SOIL/FILL SAMPLES

(page 1 of 2)

LOCATION	SAMPLE	DEPTH	LEAD	LEAD	PCB	PCB	PCB	PCB	PCB	PCB	pН		
	NO.	IN FEET	TOTAL	TCLP	1232	1242	1248	1254	1260	TOTAL	VALUE	TOC	CEC
PAVED FILL AREA	B201-S1A	0.9-2.9	105	0.372	ND	ND	16.4	ND	ND	16.4	6.2		
NORTH OF PLANT 2	B201-S1B	0.9-2.9	68.2	0.461	ND	ND	23.9	ND	ND	23.9	7.4		
	B202-S1	1.0-3.0	575	1.49	ND	ND	82.7	ŊD	ND	82.7	9.2		
	B205-S1	1.0-3.0	131	0.226	ND	ND	13.5	ND	ND	13.5	8.3		
	B206-\$1	1.0-3.0	2240	ND	ND	ND	20.6	ND	ND	20.6	8.9		
	B209-S1	1.0-3.0	302	0.383	ND	ND	1.4	ND	ND	1.40	9.0		
	B210-S1A	1.5-3.5	557	2.36	ND	ND	ND	3.70	ND	3.70	6.8		
	B210-S1B	1.5-3.5	6940	2.46	ND	ND	ND	3.73	ND	3.73	8.9		
	B212-\$1	1.0-3.0	5.90	ND	ND	ND	0.025	ND	ND	0.025	9.5		
	B213-S1	1.0-3.0	35.3	ND	ND	ND	0.026	0.146	ND	0.172	8.7		
	B214-S1	1.0-3.0	231	ND	ND	ND	0.071	0.131	ND	0.202	8.9		
	B215-S1	1.0~3.0	6220	7.88	ND	0.550	ND	0.760	ND	1.31	8.7	1.47	4.14
	B216-S1	1.0-3.0	366	2.92	4.23	ND	ND	1.44	ND	5.67	8.4		
	B217-S1	1.0-3.0	33.4	ND	ND	ND	ND	0.238	ND	0.238	9.4	2.38	18.1
	B218-S1	1.0-3.0	124	4.54	ND	ND	1.89	1.53	ND	3.42	8.85		
	B219~S1	1.0-3.0	2370	7.52	ND	ND	ND	60.3	ND	60.3	9.0		
	B220-S1	1.0-3.0	3740	0.790	ND	ND	15.2	16	ND	31.2	9.3		
	B221-S1	1.0~3.0	98.9	ND	ND	ND	ND	ND	ND	0	8.9		
	B223-S1	1.0-3.0	56.7	ND	ND	ND	16.5	ND	ND	16.5	8.9		
	B225-S1	1.0-3.0	9730	ND	3.64	NO	ND	2.37	ND	6.01	9.0		
	B226-S1	1.0-3.0	314	2.11	ND	ND	0.738	1.10	ND	1.84	8.7		
	B228-S1	1,5-2.5	10300	29.2	ND	ND	0.362	0.671	ND	1.03	9.5	1.43	12.3
	B229~S1	1.0~3.0	156	0.730	ND	ND	7 35	1.05	ND	8.40	10.1		
	B231-S1	1.0-3.0	29.9	0.195	ND	ND	0.580	0.070	ND	0.650	10.0		
	B233-S1	1.0-3.0	250	1.13	2.38	ND	ND	1.81	ND	4.19	8.7		
	B234-S1	1.0-3.0	64.3	11.0	0.236	ND	ND	0.030	ND	0.266	7.9		
	B237~S1	1.0-3.0	196	ND	ND	ND	0.512	0.648	ND	1.16	7,15		
	B238-S1	1.0-3.0	160	ND	ND	ND	1.28	0.399	ND	1.68	6.9		
	B239-S1	1.0-3.0	31.4	ND	ND	В	ND	0.027	ND	0.027	6.4		
	B239-S2	3.0→5.0	1280	21.6	ND	ND	0.894	0.761	ND	1.66	7.2		
	B241-S1	0.5-2.5	ND	0.160	ND	ND	ND	ND	ND	0.0	8.75		
	B243-S1	1.0-3.0	40000	ND	ND	ND	0.904	ND	ND	0 904	8.95		
	B243-S2	3.0-5.0	56500	30.7	ND	ND	4.97	ND	ND	4.97	11.5		
	B245-\$1	1.0-3.0	14700	ND	ND	ND	1.05	ND	ND	1 05	10.4		
	B250-S1	0.0-2.0	15000	28.0	ND	ND	1.32	3.32	ND	5.14	9.55		
	B251-S1	0.0-2.0	3570	28.0	ND	ND	6.00	3.63	ND	9 63	9.2		
	B251-S1	0.0-2.0	147	ND	ND	ND	19.8	ND	ND	19.3	11.5		
	P527~21	0.0-2.0	14/	,,,,	- 110	,,,,	13.0			14.4	1		
COMPARISON CRITER	RIA (2)		500	5.00						25			

FILE NO.

TABLE III ROTH BROS. SMELTING CORP. PLANT 2

SUMMARY OF LABORATORY ANALYTICAL DATA SOIL/FILL SAMPLES

(page 2 of 2)

											,		
LOCATION	SAMPLE	DEPTH	LEAD	LEAD	PCB	PCB	PCB	PC8	PCB	PCB	pН		
	NO.	IN FEET	TOTAL	TCLP	1232	1242	1248	1254	1260	TOTAL	VALUE	TOC	CEC
BAGHOUSE/SCRAP	B253-S1	1.0-3.0	34.8	ND	ND	ND	ND	ND	ND	0.0	10.4		
STORAGE AREA	B254-S1	1.0-3.0	16.0	ND	ND	ND	ND	ND	ND	0.0	10.1		
	B254-S2	3.0-5.0	ND	ND	ND	ND	ND	ND	ND	0.0	8.5		
	B260-S1A	1.0-3.0	44.6	ND	ND	ND	ND	0.980	ND	0.0	7.0		
	B260-S18	1.0-3.0	33.0	ND	ND	ND	ND	0.076	ND	.980	6.8		
	B263-S1A	1.0-3.0	17.7	ND	ND	ND	0.021	0.285	ND	.076	8.7		
	B263-S18	1.0-3.0	63.2	ND	ND	ND	ND	ND	ND	.306	8.8		
	B263-S2	3.0-5.0	ND	ND	ND	ND	0.711	0.691	ND	0.0	8.3		
	B264-S1	0.5-2.5	29600	189	ND	ND	0.380	0.593	ND	1.402	7.6		10.2
	B265-S1	0.5-2.5	ND	ND	ND	ND	ND	0.133	ND	.973	8.2		
	B266-S1	0.5-2.5	30.0	ND	ND	ND	ND	0.031	ND	.133	8.9		6.98
	B268-S1	0.5-2.5	64.0	ND	ND	ND	ND	4.95	ND	.031	8.65		
	B269-S1	0.5-2.5	ND	ND	ND	ND	ND	ND	GN	4.95	6.9		
	B272-S1	1.0-3.0	36.3	ND	ND	ND	ND	0.267	ND	0.0	8.6		
	B273-S1	1.0-3.0	33.0	ND	ND	ND	ND	0.552	ND	.267	7.05		
	B274-S1	1.0-3.0	2980	ND	ND	ND	ND	0.517	ND	.552	10.15		
	B275-S1	1.0-3.0	152	ND	ND	ND	ND	0.060	ND	.517	9.6		
	B276-S1	1.0-3.0	350	ND	ND	ND	ND	ND	ND	.060	8.4		
FILL AREA	B278-S1	0-2.0	752	5.05	ND	ND	72.3	ND	ND	72.3	7.6		8.79
	B278-S2	2.0~4.0	120	ND	ND	ND	27.7	ND	ND	27.7	8.55		
	B278-S3	4.0-6.0	ND	ND	ND	ND	0.067	ND	ND	.067	7.2		
	TP201-J1	1.5-2.5	563	4.35	ND	ND	29.4	ND	ND .	29.4	10.35	1.40	4.26
	TP201-J2	2.5-3.0	42.0	ND	ND	ND	1.62	ND	ND	1.62	10.2	ND	3.33
	TP202-J1	2.5-3.0	348	5.40	ND	ND	164	ND	ND	164	8.9		
	. 11 202 -01	2.0 0.0									1		
LBS-3 AREA	B282-S1	0-2.0	1850	12.2	ND	ND	7.13	ND	ИD	7.13	8.15	1.37	6.00
and divines	B263-S1	0-2.0	2650	22.7	ND	ND	3.19	ND	ИD	3.19	8.2		/
	B284-S1	0-2.0	1530	14.3	ND	ND	40.1	ND	ND	40.1	8.75	1.04	6.06
	B285-S1	0-4.0	3740	21.0	ND	ND	0.447	0.803	ND	1.25	7.95		1
	D20351	0-4.0	0.40	21.0			• • • • • • • • • • • • • • • • • • • •						
STORM SEWER	SDS-1-6	0-0.3	26500	157	ND	DИ	9.20	ND	1.72	10.92	8.9	2.15	
DISCHARGE	SDS-1-7	0-0.3	35700	74.5	ND	ND	10.3	ND	1.65	11.95	8.7	7.23	!
	SDS-1-8	0-0.3	41500	135	ND	ND	1.78	СИ	2.80	4.58	7.55	11.5	!
COMPARISON CRITE			500	5.00						25			

NOTES:

- 1. Concentrations expressed in parts per million (ppm). See also note 7.
- 2. Concentrations which are outlined exceed comparison criteria. Comparison criteria consist of: 1) Superfund Record of Decision: United Scrap Lead, OH (Sept. 1988): 1987) 2) EPA Regulatory Levels for Toxicity Characteristics Constituents; and 3) EPA 40 CFR Part 761 PCB Spill Cleanup Policy 1987.
- 3. ND indicates analyte not detected above laboratory detection limits.
- 4. TCLP: Toxicity Characteristic Leaching Procedure
- 5. TOC: Total Organic Carbon. Analyses performed on subset of 10 samples.
- 6. PCB Total: Sum total of PCBs detected.
- 7. CEC: Cation Exchange Capacity. Analyses only performed on subset of 10 samples. Concentrations expressed in milliequivalents per 100 grams (meq/100 g).

edh:70185-42\labdata

TABLE IV ROTH BROS. SMELTING CORP.

SUMMARY OF LABORATORY ANALYTICAL DATA GROUNDWATER SAMPLES

WELL NO.	B273-OW	8273-OW 8277-OW	B277-OW	B278-OW *	• WO-6728	B279-OW	D280-OW	D281-OW	B286-0W	B287-OW	D280-OW D281-OW B286-OW B287-OW B290-OW B291-OW B292-OW B293-OW GWG GW	0291-0W	1292-OW B	293-OW T	WATER C TOGS 1.1.1 CLASS GA GW	WATER QUALITY CRITERIA S 1.1.1 6 NYCRR 10 NY SS GA PART 703.5 PAF SW GW STDS. DW S	ERIA 10 NYCRA PART S DW STDS.
ALUMINUM TO	TOTAL 7.48 DISS. ND	1.85 ND	40.1 ND	0.16 / 0.22	8.30 / 7.30 20.0 / 3.51	16.7	24.B 0.11	4.20 ND	0.70 ND	1.47	17.0 ND	27.1 ND	5.70 ND	17.7 NO	NAV	NAV	NAV
CALCIUM TO	TOTAL 447 DISS, 428	177 93.0	187 ON	180 / 34.2 6.84 / 19.8	44.9 / 22.9 35.4 / 25.5	25.8 27.6	97.0	197	355	426	371	177	98.2	123	NAV	NAV	NAV
IRON TO	TOTAL 15.9 DISS. 0.165 JIAI	52.5 t ND JMt	54.7 0.151 JIAI	299 / 10.2 0.575 JAN / 0.225	93.1755.7 39.0 JML/ 6.75	9.40	23.7 ND JMI	3.18 ND JMI	ND JMI	1.07 ND JAH	27.5 0.825 JIM	662 0.076	0.109	14.6 ND	0.300 TS	0.300	0.300 (A)
POTASSIUM TO	TOTAL 19.5 DISS. 9.11	12.0 15.5	13.9	47.078.45	14.1 / 4.36 5.04 / 4.13	5.00	9.80 0.296	3.54	15.6	5.15	12.4	9.97	6.44	3.10	NAV	NAV	NAN.
LEAD TO	TOTAL ND DISS. ND	Q Q	0.058 ND	1.52 / 0.0477 ND / ND	0.204 / 0.293	0.212	O O	8 S	O O	ON ON	0.839 ND	0.0266 ND	0.292 ND	0.0268 ND	0.025 TS	0.025	0:020
PCBs	ND (Total)	ND (Total)	ND (Totat)	24.4 / ND (Total)/(Diss.)	ND / ND (Total)(Diss.)	ND (Diss.)	ND (Total)	ND (Total)	ND (Total)	NO (Total)	ND (Total)	ND (Diss.)	ND (Diss.)		0.0001 TS	0.0001	
PET, HYDROCARBON (IR) PET, HYDROCARBON (GC)	NA NA	žž	X X	× × ×	NA NA	ž ž	¥ ¥	₹ X	ξX	2 ¥	4.52 NO	<u> </u>	X X	žž			
pH (After Dovol., 1/29/91)	09:9	7.50	ΥN	9.5	7.9	NA	VN VN	7.2	7.3	7.2	7.2	7.8	0.2	2.5			
CONDUCTIVITY (1/29/91)	8700	1350	Ϋ́	3200	\$100	NA A	¥	2070	2660	2420	2100	1500	1900	1620			
TEMPERATURE (C - 1/24/91)	91) 8.80	24.2	٧V	20.6	14	NA	٧×	23.7	22.9	17.3	12.3	٧٧	¥	¥N			

- 1. Concentrations expressed in pasts per million (ppm).
 2. Concentrations which are outlined exceed water quality criteria.
 3. No Indicates analyte not detected above iaboratory detection limits.
 4. TS = TOCS 1.1.1 Standard. See Note 17.
 5. (A) Total concentration of from and Manganese should not exceed 500 up/l (0.500 ppm).
 6. MAY Dast and exactless.
 7. Water quality criteria reterences:
 7. Water quality criteria reterences:
 7. TOCS 1.1.1: NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1).
 7. Ambienty Water Quality Standards and Guidance Values, April 1, 1981, NYSDEC Monneandum.
 8. YCCRN, Trite 6, Chapton X, "Water Quality Regulations Surface Water and Goundwater Classifications and Standard", Part 703, Paraglaph 703.5, NYSDEC, Tevisod March 31, 1906.
 8. NYCRN, Title 10, Part 5, "Regulations for Drinking Water Supplies", NYSDOI.

- 8. Total samples were not filtered and contained sodiment. Dissolved (Diss.) samples
- were field filtered.

 J. J.M. Indicates an estimated value due to matrix spike and/or matrix spike duplicate outside control limits. Matrix interference suspected; repeat analysis still unacceptable, 10. NA Indicates sample not analyzed.

 11. pit and Conductivity analyzed on 29 January 1991 by 18A of New York personnol.

 11. pit and Conductivity analyzed on 29 January 1991 by 18A of New York personnol.

 12. Indicates well was sampled during two events. Data presented shows results from both words.

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TABLE V ROTH BROS. SMELTING CORP. PLANT 2

LEAD ISOTOPIC ANALYSES

% Std. Err.	0.011	0.049	0.021	0.137	0.013	0.017	0.007	0.200	0.034	0.023	0.052	0.006	0.010	0.017	0.124	0.005
206Pb/207Pb	1.166	1.123	1.189	1.184	1.166	1.229	1.175	1.177	1.229	1.238	1.227	1.218	1.200	1.218	1.200	1.215
% Std. Err.	0.016	0.019	0.092	0.161	0.015	0.017	0.007	0.181	0.028	0.026	0.039	0.008	0.015	0.022	0.109	0.008
206Pb/204Pb	18.102	19.236	18.511	18.425	18.124	19.281	18.274	18.365	19.238	19.389	19.195	19.022	18.710	19.054	18.640	18.956
% Std. Err.	0.014	0.045	0.080	0.123	0.013	0.016	0.007	0.127	0.018	0.014	0.031	0.007	0.012	0.009	0.064	0.006
207Pb/204Pb	15.527	15.650	15.571	15.542	15.539	15.688	15.553	15.545	15.644	15.667	15.654	15.623	15.584	15.638	15.531	15.604
% Std. Err.	0.016	0.022	0.082	0.159	0.015	0.016	0.008	0.164	0.021	0.033	0.041	900'0	0.015	0.016	0.083	0.009
208Pb/204Pb	37.782	38.504	38.110	38.004	37.840	38.669	37.993	38.034	38.474	38.623	38.556	38.371	38.130	38.360	38.058	38.274
Pb Conc. (ppm)	7.88	29.2	ND	0.79	6220	10300	33.4	3740	1	;	;	;	;	. 200000	9	15
Sample	B215-S1 L	B228-S1 L	B217-S1 L	B220-S1 L	B215-S1	B228-S1	B217-S1	B220-S1	Stack #1	Stack #2	Stack #3	Stack #4	Stack #5	LDC-1	NBG-1	NBG-2
Location	PAVED FILL	AREA							STACK	EMISSIONS				BAGHOUSE DUST	NATIVE SOIL	

NOTES:

- 1. Lead isotopic analyses was conducted by the Department of Geological Sciences, University of Rochester.
 - Samples were provided to the University by H&A of New York.
- 2. Lead concentrations shown in the third column are derived from TCLP and total lead analyses conducted by
 - General Testing Corporation (GTC).
- Lead concentration for LDC-1 (Baghouse Dust) is an approximation. The sample was not analyzed by GTC.
 Lindicates sample consists of leachate derived from the TCLP analyses.
 - Lindicates sample consists of secured outlined for the four analysis.
 ND indicates lead was not detected above laboratory detection limits.
 - -- Indicates data not available.
 - 5. -- morcates data not available. 7. See Figure 5 for plot of data in this table.

. מפס ויפות ופין היום אינו היום יי

edh/70185-42\h&a-load

		TABLE VI ROTH BROS. – PLANT 2 ALTERNATIVE REMEDIAL TECHNOLOGIES Page 2 of 2	E VI - PLANT 2 MAL TECHNOLOGIES : of 2
METHOD NAME	DEVELOPER	SYNOPSIS OF METHOD	APPLICABILITY
In-Situ Vitrification	GeoSafe Corporation	Melt soil in place at 1600-2000 C, thereby creating a vitrified mass of soil.	Soils/sludges with organic and inorganic pollutants.
Encapsulation	l	Excavate soil and place on liner; cover with multi-layer low permeability cap to prevent infiltration.	Most wastes except non-polor orgnaics
	: :		: :

H & A OF NEW YORK ROCHESTER, NEW YORK

ESTIMATED UNIT COST

REMARKS

\$310-360/Ton

Volume reduced by 20-40%.

Wastes immobilized into

vitrified monolith with

structural and environmental

properties.

\$62/Ton

Isolation technology.

evaluation of these technologies and others would be necessary to determine the most appropriate Note: This table presents an outline of potentially applicable technologies for site remediation. Further technology for the Roth Bros. Plant 2 site.

gmaL60

TABLE VII VOLUME SUMMARY

COMPOUNDS IN SOIL

VOLUME TOTALS

1. Total lead + TCLP Lead + PCB

13,930 cy = 19,500 T*

2. TCLP Lead + PCB

3,700 cy = 5,185 T

3. Total Lead + TCLP lead

13,900 cy = 19,500 T

4. PCBs

1,220 cy = 1,700 T

Notes:

- 1. * Assumes 1 cy = 1.4 T
- Volume summary is for estimating purposes only and may not reflect actual site conditions encountered.

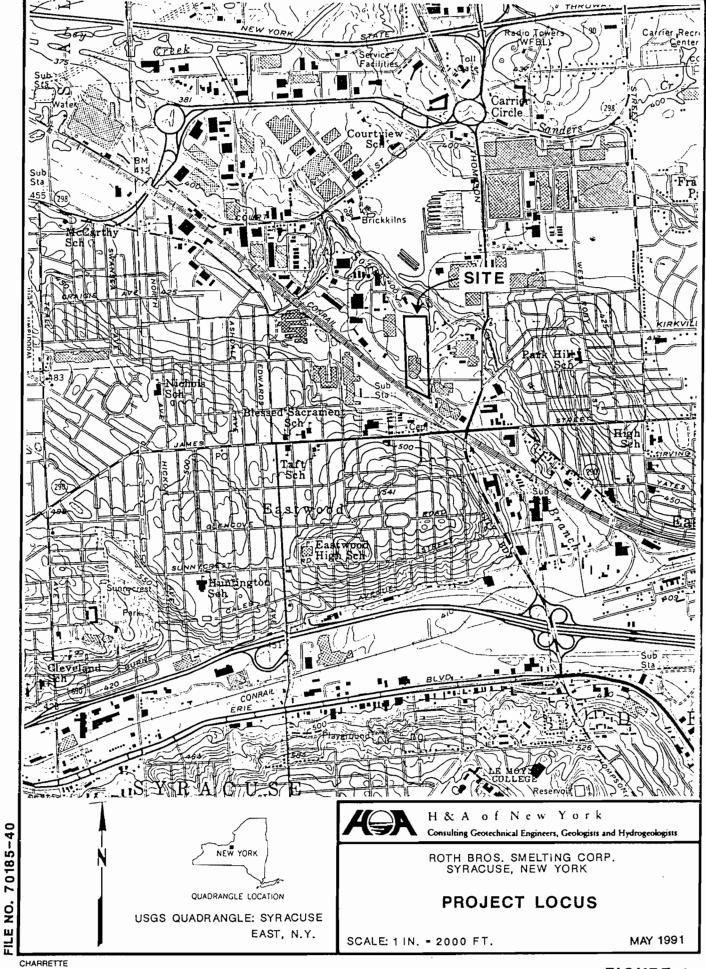
COST ESTIMATES FOR SELECTED TECHNOLOGIES

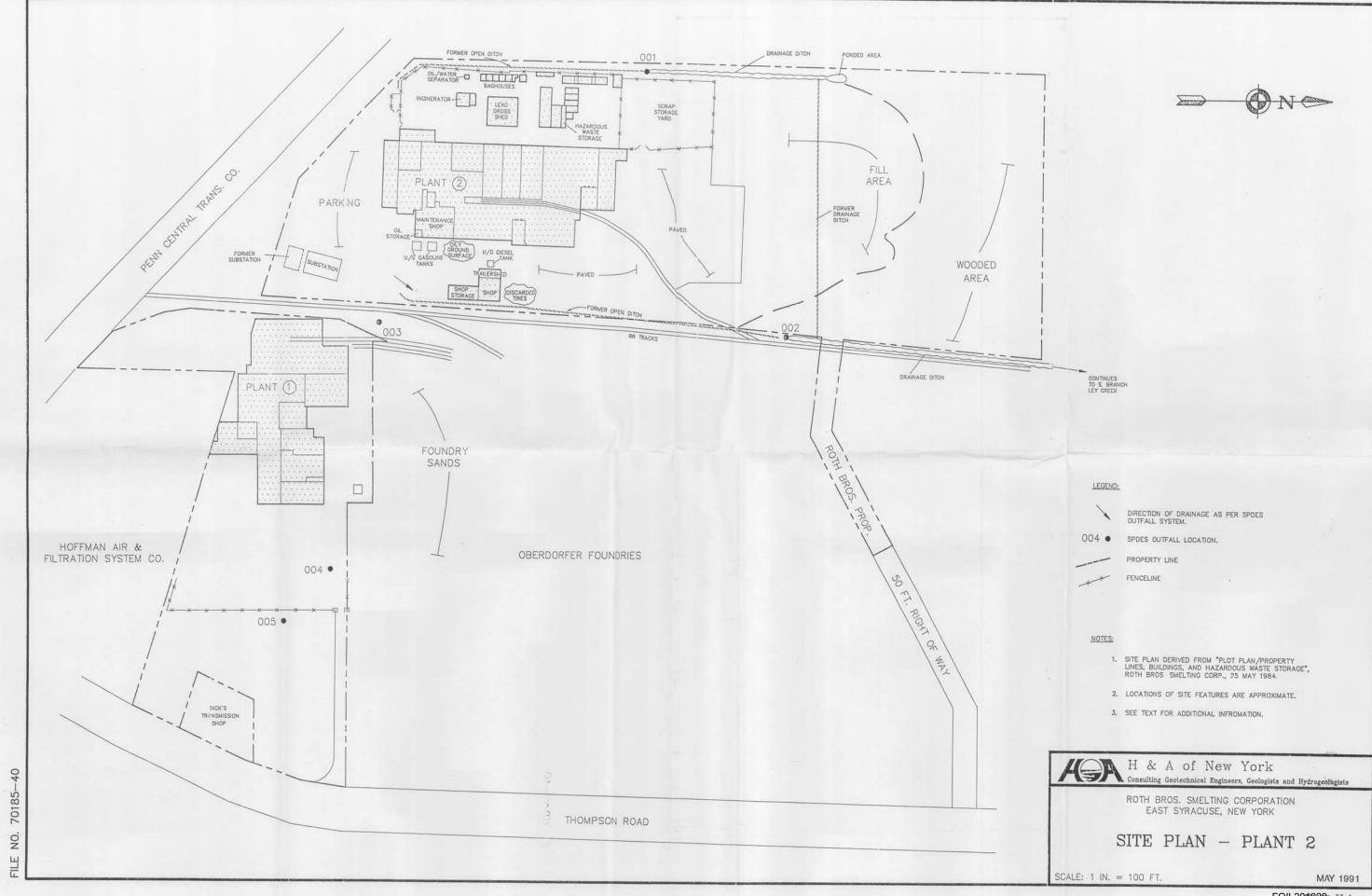
	METHOD	DISPOSAL/TREATMENT COSTS	TOTAL COST ESTIMATE**
1.	Offsite Disposal	\$5.4 to \$7.1 million	\$7.0 to \$9.2 million
2.	In-Situ Solidification	\$3.8 million	\$5.0 million
3.	Silicate Stabilization	\$2.1 million	\$2.7 million
4.	Capping In-Place	\$0.6 to \$0.8 million	\$0.8 to \$1.0 million
5.	In-Situ Vitrification	\$6.1 to \$7.1 million	\$7.9 to 9.2 million
6.	Encapsulation	\$1.1 million	\$1.4 million

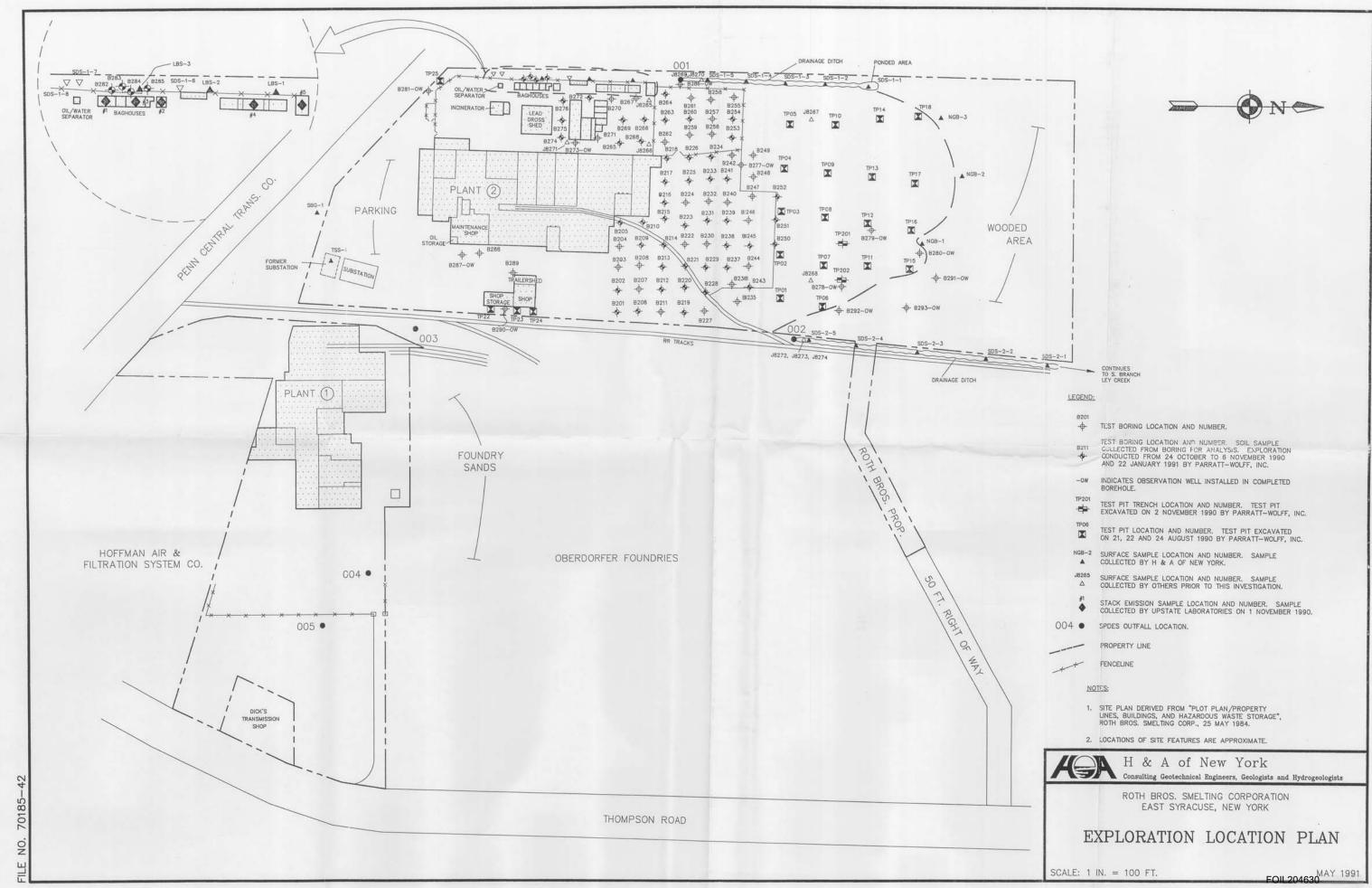
Notes:

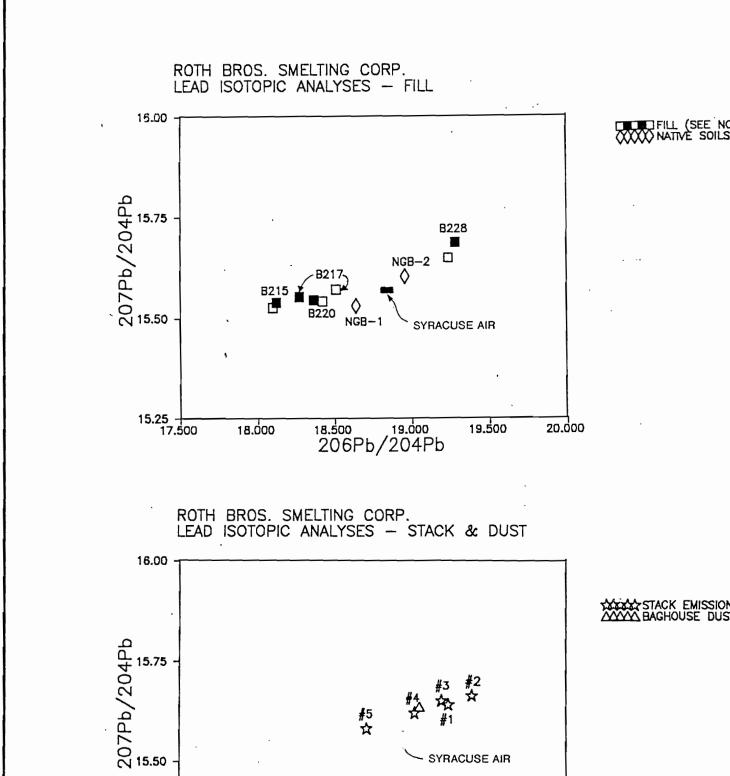
- ** Includes 30% for material excavation, handling, laboratory analyses and engineering. Additional costs may be incurred depending on specific regulatory program criteria under which remediation takes place.
- Disposal and treatment costs are estimates only based on literature reviewed.
 Actual costs will be determined based on pilot scale tests implementation, specifically for options 2, 3, and 5.
- 3. Treatment costs reflect treatment for 19,500 Tons of soil/fill material and sediments containing high lead, high TCLP lead and PCBs.

gmaL61









70185-42

CHARRETTE

15.25 | 17.500

18.000

SYRACUSE AIR

19.500

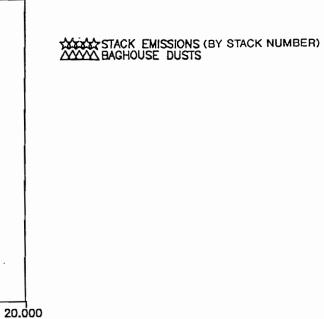
18.500 19.000 206Pb/204Pb

18.500

FILL (SEE NOTE 1)
NATIVE SOILS

NOTES:

- SOLID SQUARE REPRESENTS LEACHATE OF FILL MATERIALS. OPEN SQUARE REPRESENTS TOTAL LEAD.
- ISOTOPIC ANALYSES PERFORMED BY DEPARTMENT OF GEOLOGICAL SCIENCES, UNIVERSITY OF ROCHESTER.
- STACK EMISSION SAMPLES COLLECTED BY UPSTATE LABORATORIES.
- SEE FIGURE 2 FOR EXPLORATION LOCATIONS.



H&A of New York

Consulting Geotechnical Engineers, Geologists and Hydrogeologists

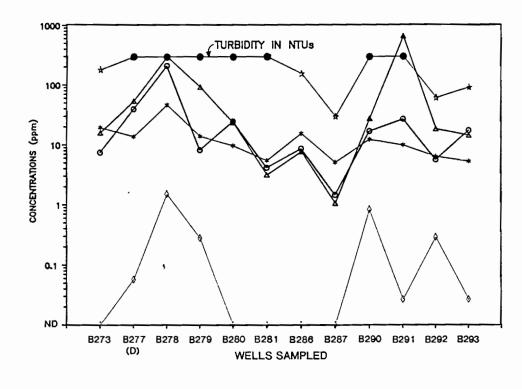
ROTH BROS. SMELTING CORP. EAST SYRACUSE, NEW YORK

LEAD ISOTOPIC DATA

MAY 1991

FIGURE 4

GROUNDWATER QUALITY RESULTS TOTAL METALS — AI, Fe, K, Pb



GOODO ALUMINUM

AAAAA IRON

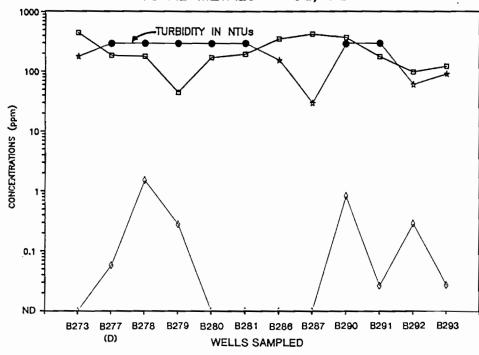
OOOOOO LEAD

AAAAA TURBIDITY (NTU)

POTASSIUM

OOOOO TURBIDITY > 200 NTU

GROUNDWATER QUALITY RESULTS TOTAL METALS — Ca, Pb



BBBBB CALCIUM ♦♦♦♦♦♦ LEAD ****** TURBIDITY (NTU) •••••• TURBIDITY > 200 NTU

NOTES:

- A 200 NEPHELOMETRIC TURBIDITY UNIT (NTU) CEILING. SEVERAL WELLS HAD NTU VALUES HIGHER THAN THE 200 NTU LIMIT, THEREFORE THE PEAKS MAY BE MORE PRONOUNCED THAN WHAT IS INDICATED.
- 2. CONCENTRATIONS OF LEAD INDICATED BY \$\displaystyle 0 \displaystyle 0 \displ
- 3. (D) = DUPLICATE SAMPLE COLLECTED FOR B227.
- 4. ND = ANALYTE NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
- 5. ALUMINUM, POTASSIUM AND IRON GENERALLY BEHAVE UNIFORMLY AS A GROUP. THE LEAD ALSO TENDS TO BEHAVE SIMILARLY TO THE ALUMINUM, POTASSIUM AND IRON.
- 6. THE MAJOR CATION CALCIUM GENERALLY BEHAVES INDEPENDENTLY OF THE TURBIDITY CONCENTRATIONS.

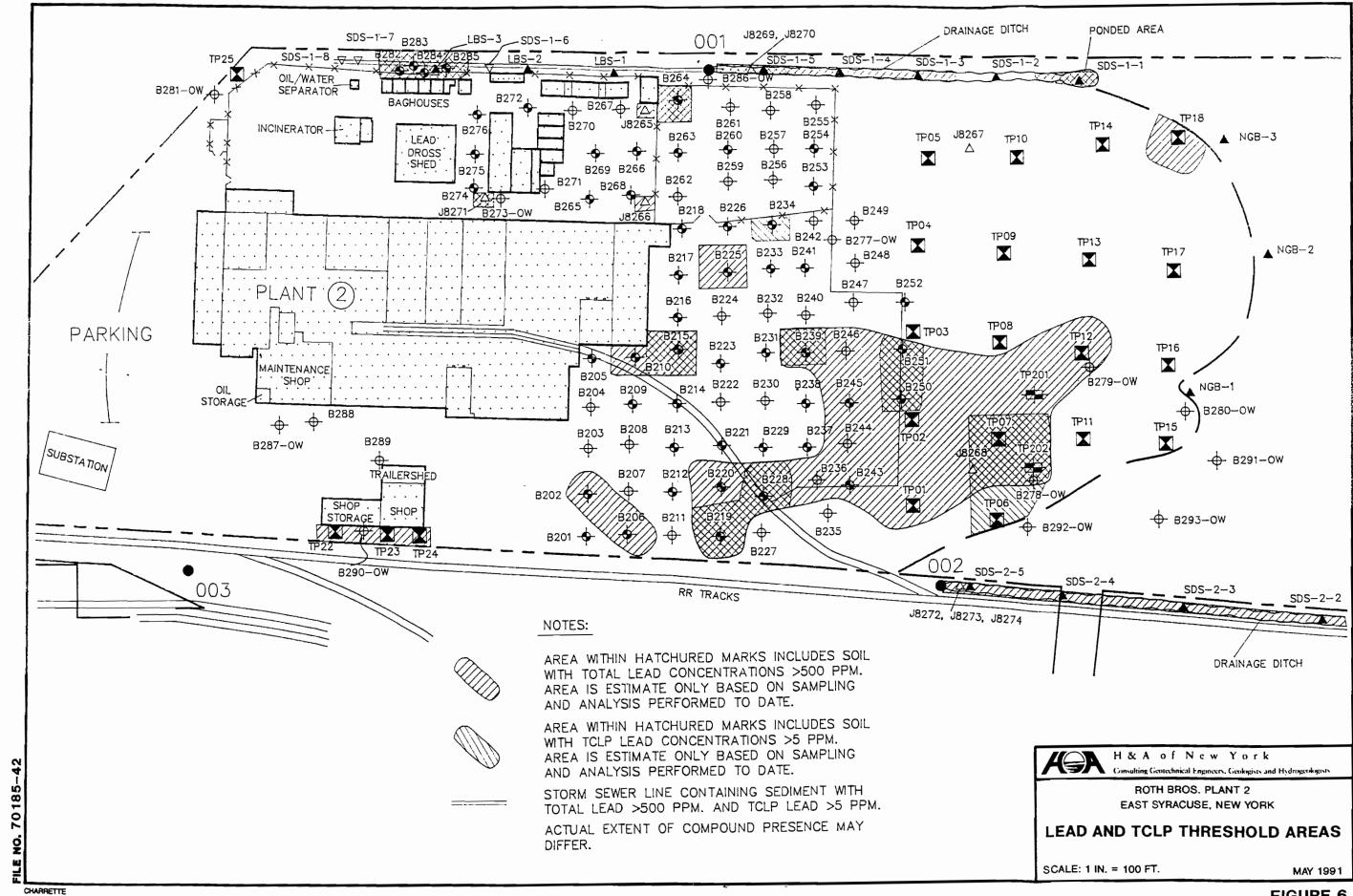


ROTH BROS. SMELTING CORP. EAST SYRACUSE, NEW YORK

GROUNDWATER QUALITY RESULTS
TOTAL METALS

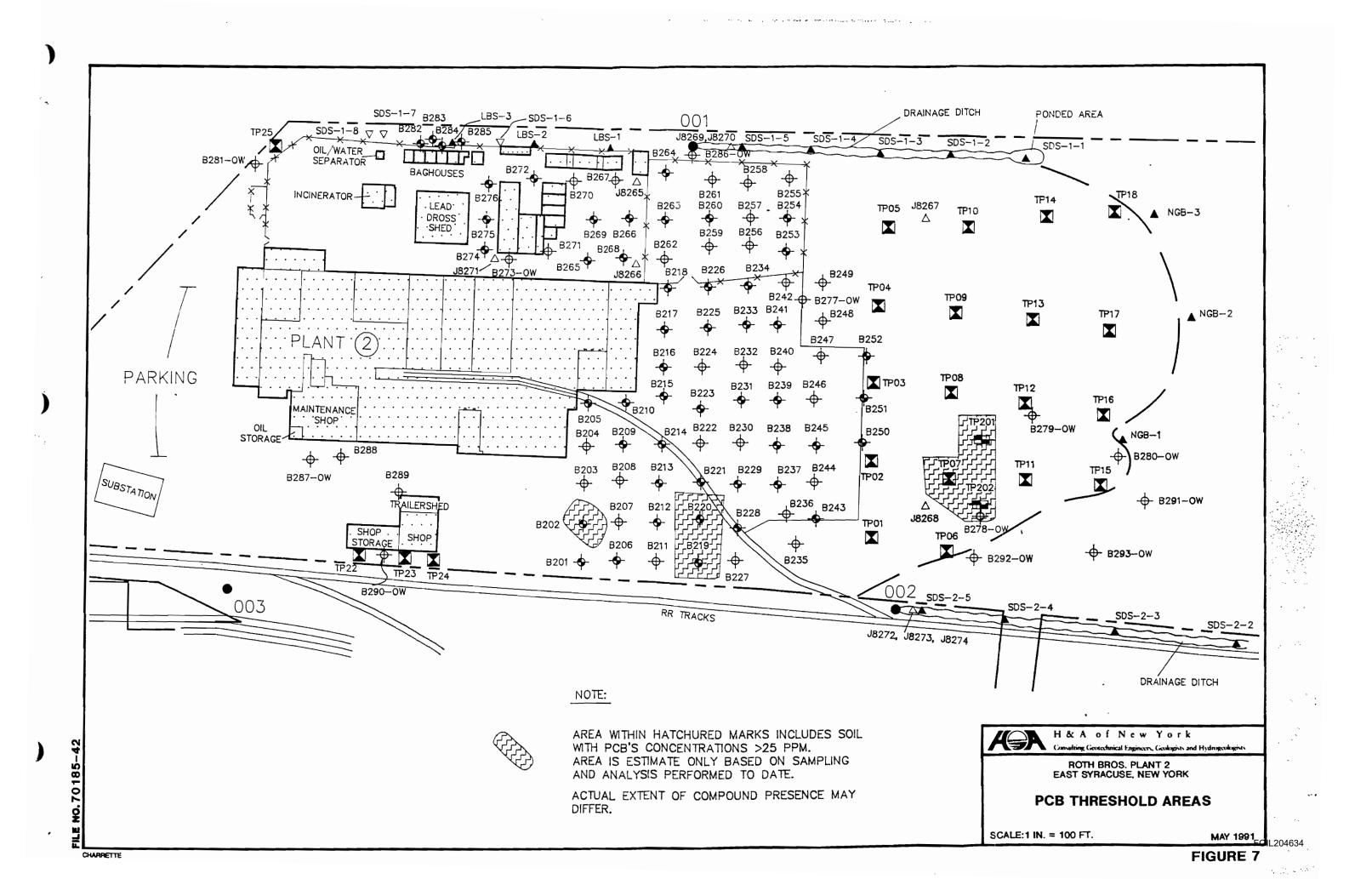
MAY 1991

FIGURE 5



,我们就是这种大型,我们们的一个人,我们的人们就是一个人的人,就是一个人的人的人,我们就是这个人的人的人,我们也没有一个人的人,我们就是不是一个人的人的人,就是 "我们就是我们的,我们就是我们的人,我们就是我们的人们的人们就是我们的人们的人们的人们就是我们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们的人们

FIGURE 6



APPENDIX A Test Boring Reports



Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Enginee	rs,		TEST BORING REPORT		BORING NO. B201
PROJECT: CLIENT: CONTRACT	KIN	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & I		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD; OTHER: Advanced auger th asphalt to 0.9 ft	rough	DATUM: START: 24 October 19 FINISH: 24 October 19 DRILLER: W. Rice H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
					0.9	-ASPHAL	T WITH SUB-B	ASE -
		8 8 9	\$1 18"/24"	0.9		Medium dense dark brown sai trace roots, with wood fra	ndy SILT, li gments and g -FILL-	ttle to trace gravel, lass fragments.
_		2 10	s2*	2.9	3.0	Loose brown interbedded law	minated SILT	and medium to fine SAND
		2 2 2	24"/24"	4.9			LACUSTRINE-	
—5 —		2				Bottom of	Boring at 4	.9 ft.
			ĺ]	1	Notes:		
						*1. Sample obtained with		
-10			1	ĺ		2. Sample S1 submitted fo	or chemical a	analysis.
			}	ĺ				
- 1			,	}				
- 15	Ì		}					
. 1								
-20 —								
-								
-								
-								
- 25 —								
	,	ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TINE	ELADOED	DEPT	H (FT) TO:		(LIN FT): 4.9		
DATE	TIME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	0 Open End Rod		
							2\$	

	onsulting	YORK, ROCHES Geotechnica sts and Hydro	ıl Engineer	·s,		TEST BORING REPORT		BORING NO. B202		
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEL ON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
1	ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:		
TYPE INSIDE D HAMMER V HAMMER F		(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 24 October 199 FINISH: 24 October 199 DRILLER: W. Rice H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
					1.0	-ASPHAL	T WITH SUB-B	ASE-		
		15 16 21	s1 20"/24"	1.0		Dense brown to black CINDE little to trace gravel.	R FRAGMENTS	and particles		
	1	26 3	\$2*	3.0	3.4		-FILL-			
	-	2 1 1	18"/24"	5.0	4.9	Very loose dark brown ORGAI	NIC SILT, li LACUSTRINE-	ttle to trace sand.		
		2 1	\$3* 24"/24"	5.0 7.0	4.9	black mottled medium to fi	rown to dark brown interbedded laminated SILT and finedium to fine SANDLACUSTRINE-			
		3				Bottom of	Boring at 7	.0 ft.		
						Notes:				
— 10 —					1	*1. Sample obtained with	1-3/8 in. ID	split spoon.		
				•		2. Sample S1 submitted fo	or chemical a	analysis.		
_										
15										
				į						
20										
.]										
. 4	ľ									
-25 —										
	ļ	ATER LEVEL O	ATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED _	DEPTI	(FT) TO:		0 Open End Rod	OVERBURDEN	(LIN FT): 7.0		
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER T Thin Wall Tube ROCK CORED (LIN FT): U Undisturbed Sample					
					S Split Spoon SAMPLES: 3S BORING NO. FORES		35			

,

Con	sulting	YORK, ROCHE Geotechnic ts and Hydro	al Enginee	rs,		TEST BORING REPORT		BORING NO. B203
PROJECT: CLIENT: CONTRACTO	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & I		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
ITI	EM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE DIA HAMMER WE: HAMMER FAI	IGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 24 October 199 FINISH: 24 October 199 DRILLER: W. Rice H&A REP: W. Lanik
	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		8	S1	1.0	1.5	-ASPHAL Medium dense brown sandy c nfragments.	T WITH SUB-B oarse to find	
		5 3 2	19"/24" S2	3.0	3.2	Loose brown silty fine SANI cuttings from 1.5 to 1.8 f	D, with layer t., and 3.0	r of black-stained metal to 3.2 ft.
_5 _		2 2 3	24"/24"	5.0		Loose red-brown sandy SILT	, little grav	vel.
						Bottom of	Boring at 5	.0 ft.
_10 _					ı			
: =								
- 15								
: -								
-20								
-								
		ſ						
- 25 —							T	
		ATER LEVEL I		H (FT) TO:		SAMPLE IDENTIFICATION SUMMARY		
DATE T	IME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod HATER T Thin Wall Tube U Undisturbed Sample S Split Spoon OVERBURDEN (LIN FT): 5.0 ROCK CORED (LIN FT): SAMPLES: 2S		
							2\$	

Co	nsulting	YORK, ROCHES Geotechnic ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B204
PROJECT: CLIENT: CONTRACT	KIK	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F.	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	ough	DATUM: START: 24 October 199 FINISH: 24 October 199 DRILLER: W. Rice H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
					1.0	-ASPHALT	WITH SUB-B	ASE-
 		14 11 5	\$1 18"/24"	1.0	1.0	Medium dense gray-brown coa gravel.	rse to fine	SAND, little to trace
		3 2		3.0	3.3		-FILL-	
 5		2 2 3	24"/24"	5.0		Loose brown interbedded lam SANDL	inated SILT ACUSTRINE-	and medium to fine
		-				Bottom of	Boring at 5	.0 ft.
		ĺ						
<u> </u>								
			}					
— 15 								
_								
_								
								•
—20 <i>—</i>			1					
<u> </u>								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELÁPSED	DEPT	H (FT) TO:	1	0 Open End Rod	OVERBURDEN	(LIN FT): 5.0
DATE	IIME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon ROCK CORED (LIN FT):	(LIN FT):	
			OI CASING	J, HOLL			2s	
							BORING NO.	B204 FOIL 204639

H&A OF NEW YORK, ROCHESTER, NEW YORK TEST BORING REPORT BORING NO. B205 Consulting Geotechnical Engineers, Geologists and Hydrogeologists 70185-42 ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. PROJECT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CLIENT: LOCATION: See Plan CONTRACTOR: PARRATT-WOLFF, INC. DRIVE CORE DRILLING EQUIPMENT & PROCEDURES BARREL **ELEVATION:** CASING SAMPLER ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: 24 October 1990 Auger BIT TYPE: START: TYPE INSIDE DIAMETER (IN) FINISH: 24 October 1990 4-1/4 2-3/8 ---DRILL MUD: ---DRILLER: W. Rice ---OTHER: Advanced auger through 140 HAMMER WEIGHT (LB) ---H&A REP: W. Lanik HAMMER FALL (IN) ---30 --asphalt to 1.0 ft. SAMPLER SAMPLE SAMPLE **STRATA** CASING DEPTH VISUAL CLASSIFICATION AND REMARKS NIMBER & DEPTH CHANGE BLOWS BLOWS PER FT PER 6 IN RECOVERY (FT) (FT) (FT) -ASPHALT WITH SUB-BASE-Medium dense brown coarse to fine GRAVEL. 1.0 1.5 15 S1 Medium dense sandy coarse to fine GRAVEL. 15 18"/24" 3.0 25 Same, except loose, with layer of yellow-brown sandy SILT from s2* 3.0 3.8 to 4.1 ft. 5 20"/24" 5.0 4.1 Medium dense brown interbedded SILT and, medium to fine SAND, with dark brown organic silt layer. -LACUSTRINE-Bottom of Boring at 5.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis. - 15 20 SAMPLE IDENTIFICATION SUMMARY WATER LEVEL DATA OVERBURDEN (LIN FT): 5.0 DEPTH (FT) TO: Open End Rod **ELAPSED** DATE TIME ROCK CORED (LIN FT): BOTTOM WATER Thin Wall Tube TIME (HR) BOTTOM U Undisturbed Sample OF CASING OF HOLE 28 SAMPLES: S Split Spoon FOIL 204640 BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B206 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES I TEM CASING SAMPLER **BARREL ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE Auger BIT TYPE: START: 24 October 1990 FINISH: 24 October 1990 2-3/8 DRILL MUD: INSIDE DIAMETER (IN) 4-1/4 ---HAMMER WEIGHT (LB) ---140 OTHER: Advanced auger through DRILLER: D. Richmond HAMMER FALL (IN) 30 --asphalt to 1.0 ft. H&A REP: W. Lanik DEPTH CASING SAMPLER SAMPLE SAMPLE STRATA NUMBER & BLOWS BLOWS **DEPTH** CHANGE VISUAL CLASSIFICATION AND REMARKS PER 6 IN (FT) PER FT RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-Medium dense gray-brown coarse sandy GRAVEL. 12 1.0 1.5 S1 Medium dense brown mottled sandy SILT, little gravel, trace 15 20"/24" 17 3.0 cinders, with layer of black-stained metal cuttings from 2.6 13 to 3.1 ft. -FILL-3 **S2*** 3.0 3.1 2 Loose dark brown ORGANIC SILT, with layer of medium sand, wet. 12"/24" 5.0 2 -LACUSTRINE-**S3*** 5.0 5.2 2 Medium dense brown to red brown sandy SILT, little to trace 7 10"/24" 7.0 gravel. -GLACIAL TILL-8 Bottom of Boring at 7.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis. 15 20 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 7.0 DATE TIME ELAPSED Open End Rod TIME (HR) **BOTTOM** BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): OF CASING OF HOLE 11 Undisturbed Sample S Split Spoon SAMPLES: 3\$ BORING NO. F**672**904641

		nsulting	YORK, ROCHE Geotechnic	al Engineer	·s,	T	TEST BORING REPORT		BORING NO. B207
	PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
	TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, To BIT TYPE: DRILL MUD: OTHER: Advanced auger the asphalt to 1.0 ft.	rough	
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
							-ASHAL1 Medium dense brown sandy GF	T WITH SUB-B	ASE-
			13 9 7 5		3.0	1.5 3.0	Medium dense brown to black cinder and brick particles, 2.0 ft.	c silty coar	se to fine SAND, with of black ash from 1.8 to
			3 2	\$2 24"/24"	nottled SILT LACUSTRINE-	, with layer of			
	5		3				Bottom of	Boring at 5	.0 ft.
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			WATER LEVEL	DATA			SAMPLE IDENTIFICATION	=	SUMMARY
\ 		T.11.5	F1 400F0	DEPT	H (FT) TO:		O Once Field Do 1	OVERBURDEN	(LIN FT): 5.0
	DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
ł				<u></u>	J. 110EE		U Undisturbed Sample	SAMPLES:	2\$
Į	,						BORING		B207 FOIL204642

	на	consulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B208
``	PROJECT CLIENT: CONTRAC	NIX	TH BROS. SMEI KON HARGRAVE RRATT-WOLFF,	DEVANS & D		HASE II	·		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
		ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:
	TYPE INSIDE HAMMER HAMMER	DIAMETER WEIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	rough	DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
							-ASPHALT Medium dense brown sandy co	WITH SUB-B	
		_	9 3	s1	1.0	1.9	Loose gray-brown coarse to		
	<u> </u>	_	3 4	21"/24"	3.0		organic silt.	ACUSTRINE-	
	_ ·	-	3 2 4 5	\$2 18"/24"	3.0 5.0	3.5	Loose light brown interbedd medium SANDL	ded laminate	d SILT and coarse to
			1				Bottom of	Boring at 5	.0 ft.
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ļ	<u> </u>	-	WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
ŗ			MAILK LEVEL		H (FT) TO:		SAUTE TOURITH TOATTON	OVERBURDEN	
	DATE	TIME	ELAPSED TIME (HR)	ВОТТОМ	воттом	WATER	O Open End Rod T Thin Wall Tube	ROCK CORED	
-				OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	2 s
	,						BORING NO.	FOIL 204643	

	Co	nsulting	YORK, ROCHES Geotechnica	il Engineer	s,		TEST BORING REPORT		BORING NO. B209
,	PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
ĺ	I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:
	TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	ough	DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
ĺ						4.0	-ASPHALT	WITH SUB-B	ASE-
			17 25	\$1	1.0	1.0	Medium dense dark brown gra cinder fragments and partic		e to fine SAND, trace
			29 12	14"/24"	3.0	7.5	Medium dense gray-brown san	dy SILT.	-FILL-
			3 3 3	\$2* 24"/24"	3.0 5.0	3.5	Loose brown coarse to fine	SAND, with a	occasional layer of silt.
			3				Bottom of	Boring at 5	.0 ft.
ŀ							Materia		
ŀ							Notes: *1. Sample obtained with 1	-3/8 in sn	lit spoon.
ŀ							2. Sample S1 submitted fo		
_	—10 —						2. Sample of Samilities 19		,
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•	_	· · · · · · · · · · · · · · · · · · ·	WATER LEVEL		u /ET\ T^		SAMPLE IDENTIFICATION	OVERBURGE	SUMMARY (LIN FT): 5.0
	DATE	TIME	ELAPSED TIME (HR)	BOTTOM	H (FT) TO:	WATER	O Open End Rod T Thin Wall Tube	OVERBURDEN ROCK CORED	,
				OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	28
ľ	0/24/90	1545	0.25		5.5	2.9	· 	BORING NO.	B209 FOIL 204644

	onsultin	YORK, ROCHE g Geotechnic sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B210		
PROJECT CLIENT: CONTRAC	NI	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
	ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:		
TYPE	DIAMETER WEIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.5 ft	rough	DATUM: START: 24 October 1990 FINISH: 24 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
			_		1.0	-ASPHAL	T WITH SUB-B	ASE -		
	7 S1 1.5 9 11 24"/24" 3.5					Medium dense brown to dark brown sandy SILT, little gravel, trace cinder fragmentsFILL-				
-	-	5			3.0	Loose dark brown to black	mottled ORGA	NIC SILT.		
5		2 2 2	s2* 14"/24"	3.5 5.5		Same.	LACUSTRINE-			
		1 1 WOH	s3* 24"/24"	5.5 7.5		Same, except very loose, w fine sandy SILT.	ith layer of LACUSTRINE-	light brown laminated		
<u> </u>		WOH			1	Bottom of	Boring at 7	.5 ft.		
	-] []				
10	4		1			Notes:	- 4 7 (0 :-)	10 lie		
-	-					*1. Sample obtained with				
						2. Sample S1 submitted	TOP Chemica	i anatysis.		
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25										
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		0 Open End Rod	OVERBURDEN	(LIN FT): 7.5		
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	ER T Thin Wall Tube ROCK CORED U Undisturbed Sample		-		
						S Split Spoon	SAMPLES:	3\$		
,							BORING NO.	B210 FOIL204645		

	Co	nsulting	YORK, ROCHES	al Engineer	`s,		TEST BORING REPORT	_	BORING NO. B211
:	PROJECT: CLIENT: CONTRACT	ROT	TH BROS. SMEI	LTING CORPO	ORATION - F	PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	1	TEM		CASING	DRIVE SAMPLER	CORE	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
	TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	ss 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thi asphalt to 1.0 ft.	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						1.0	-ASPHAL1	T WITH SUB-B	ASE -
			9 15 6	s1 18"/24"	1.0	2.0	Medium dense gray-brown gr layer of black-stained met		
			4 4	\$2	3.0	3.2	Medium stiff brown and bl	lack mottled LACUSTRINE-	ORGANIC SILT.
	5		5 5	14"/24"	5.0		Loose brown medium SAND, fine sand.	, with occas	
	-						Bottom of	Boring at 5	.0 ft.
	10								
									·
	—15 <i>—</i>								
	20								
	- 1	1	WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
	DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		0 Open End Rod	OVERBURDEN	(LIN FT): 5.0
	DATE	1145	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample	ROCK CORED	
							S Split Spoon	SAMPLES:	2\$
	,							BORING NO.	FOIL204646

Co	nsulting	YORK, ROCHE G Geotechnic sts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B212
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough ·	DATUM: START: 25 October 199 FINISH: 25 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
					1.0	-ASPHAL	T WITH SUB-B	ASE -
_		20 27	S1	1.0] '	Dense brown sandy GRAVEL,	wet.	
		55 51	10"/24"	3.0]		-FILL-	
		24 4 4	\$2* 24"/24"	3.0 5.0	3.1 4.1	Medium dense brown mottled trace fine gravel.	coarse to f	ine SAND, little to
 5		5				Loose red-brown sandy SIL	T, little to GLACIAL TILL	trace fine gravel.
							Boring at 5	
						Notes:		
—10 —						*1. Sample obtained with	1-3/8 in. ID	split spoon.
		l	}			2. Sample S1 submitted fo	or chemical a	analysis.
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	١	MATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED -	DEPTI	H (FT) TO:		(LIN FT): 5.0		
DATE	THE	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample		(LIN FT):
			OF CASING	OI HOLE		S Split Spoon	SAMPLES:	2\$
					BORING NO. FOIB 204647			

	onsulting Geologis	YORK, ROCHES Geotechnics sts and Hydro	al Engineer ogeologists	s,		TEST BORING REPORT		BORING NO. B213			
PROJECT CLIENT: CONTRAC	NIX	TH BROS. SMEI ON HARGRAVE RRATT-WOLFF,	DEVANS & D		HASE II	FILE NO. 70185-4 SHEET NO. 1 OF LOCATION: See Pla					
	TEM	_	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC RIG TYPE: Mobile B-57, Tru		ELEVATION: DATUM:			
TYPE INSIDE I HAMMER I HAMMER		(IN) (LB) (IN)	Auger 4-1/4 	\$\$ 2-3/8 140 30		BIT TYPE: DRILL MUD: OTHER: Advanced auger the asphalt to 1.0 ft.	rough	START: 25 October 199 FINISH: 25 October 199 DRILLER: D. Richmond H&A REP: W. Lanik			
DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AND) REMARKS			
					1.0	-ASPHAL	T WITH SUB-BA	ASE-			
[22 16 16	\$1 18"/24"	1.0	2.5	Medium dense gray-brown gra cinder particles, trace woo		e to fine SAND, trace			
 		3 3		3.0		Loose dark brown ORGANIC SI No Recovery.					
5 - -	-	3		5.0	5.1		LACUSTRINE-				
<u> </u>		3 6	\$3* 24"/24"	5.0 7.0		Loose brown mottled coarse	to fine SAND LACUSTRINE-), little silt, wet.			
├ ‐	1	8				Bottom of	Boring at 7	.0 ft.			
-	1			l		Notace					
10 -	1					Notes: *1. Sample obtained with 1	1-3/8 in In	enlit encon			
						2. Sample S1 submitted for					
			1			2. Sample ST Samirelea Te	or chemical c				
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		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY			
DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		O Open End Bod	disturbed Sample	(LIN FT): 7.0			
DATE	TIME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample					
	 	-			S Split Spoon SAMPLES:	3\$					

Co	nsultin	YORK, ROCHE g Geotechnic sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B214
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
					1.0	-ASPHAL	T WITH SUB-B.	ASE-
		6 5 5	S1 24"/24"	1.0		Loose light brown to brown with cinder fragments and	mottled same particles, a	dy SILT, trace gravel, nd metal piecesFILL-
		2 5	\$2*	3.0	1 2.13	Soft light brown mottled S	ILT, trace o	rganics.
 		2 2 2	24"/24"	5.0		-	LACUSTRINE-	
_, _ 		2				Bottom of	Boring at 5	.0 ft.
						Notes: *1. Sample obtained with 2. Sample S1 submitted for		
-6 -		JATER LEVEL (DATA			SAMPLE IDENTIFICATION		SUMMARY
				(FT) TO:		<u> </u>	OVERBURDEN	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
						S Split Spoon	SAMPLES:	2s
							BORING NO.	FOIL 204649

	onsulting	YORK, ROCHES Geotechnica its and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B215	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:	
TYPE	IAMETER JEIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tri BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 25 October 199 FINISH: 25 October 199 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
							T WITH SUB-B	ASE -	
		21 19 15	s1 20"/24"	1.0	2.8	Medium dense dark brown go cinders, with layer of bla 1.6 to 1.8 ft.			
		12 10 8	s2*	3.0		Stiff gray-brown to light borganic silt.	orown mottle	d SILT, with layer of	
		6	24"/24"	5.0			LACUSTRINE-		
]					Bottom of	Boring at 5	.0 ft.	
						Notes:			
						*1. Sample obtained with	1-3/8 in. ID	split spoon.	
						2. Sample S1 submitted for chemical analysis.			
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 15			}						
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						·			
— 20 —									
 25									
	1	JATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
			DEPT	H (FT) TO:			OVERBURDEN	(LIN FT): 5.0	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):	
							SAMPLES:	2s	
							BORING NO.	8215 FOIL 204650	

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	ıl Engineer	·s,		TEST BORING REPORT		BORING NO. B216	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F		(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile 8-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	rough	DATUM: START: 25 October 199 FINISH: 25 October 199 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
					4.0	-ASPHALT	WITH SUB-B	ASE -	
		29 26 19	s1 20"/24"	1.0	1.0	Medium dense dark-brown to fine SAND, with concrete pi			
		17 8	s2*	3.0	3.0	Medium dense brown mottled	fine SAND,	with organic layer	
		7	24"/24"	5.0		from 3.0 to 3.5 ft.	ACUSTRINE-		
—5 <i>—</i>		6				Bottom of	Boring at 5	.0 ft.	
						Notes:	7/0 :- 10		
				}		*1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.			
						2. Sample S1 submitted for	or chemical	analysis.	
<u> </u>									
								•	
— 15 —									
 20									
25							Ι		
	1	WATER LEVEL				SAMPLE IDENTIFICATION	01/525/525	SUMMARY	
DATE	TIME	ELAPSED -		H (FT) TO:	O Open End Rod				
		TIME (HR)	BOTTOM OF CASING	OF HOLE	WATER	TER T Thin Wall Tube ROCK U Undisturbed Sample S Split Spoon SAMF	ROCK CORED		
							SAMPLES:	2\$	
							BORING NO.	B216 FOIL 204651	

Co	nsultin	YORK, ROCHE g Geotechnic sts and Hydr	al Engineer	`s,		TEST BORING REPORT		BORING NO. B217		
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:		
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
					1.0	-ASPHAL	T WITH SUB-B	ASE-		
-	_ 4 S1 1.0					Medium dense dark brown to little gravel, with wood a				
		8 9	s2*	3.0	3.0	Medium dense dark brown coarse to medium sand.	fine SAND, l LACUSTRINE-	ittle organics, trace		
		9 6 9	10"/24"	5.0		Medium dense red-brown to gravelG	light brown : LACIAL TILL-	mottled sandy SILT, trace		
						Bottom of	Boring at 5	.0 ft.		
-						Notes:				
-						*1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.				
-										
10										
				1						
Γ										
20										
— 25 —										
	1	MATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED -	DEPTI	f (FT) TO:		O Open End Rod	OVERBURDEN			
			WATER		ROCK CORED					
						S Split Spoon SA	SAMPLES:	2\$		
7						BORIN		FOIL 261 652		

l co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B218	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II	•		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	ss 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr concrete to 1.0 ft	ough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS	
					0.7	-co	NCRETE PAD-		
 		25 30 32 23	S1 24"/24" S2*	1.0 3.0	3.5	Dense red-brown to dark browood fragments. Same.	wn sandy SI -FILL-	LT, little gravel, with	
5		7 3 2 4	24"/24"	5.0	3.5	Loose light brown mottled f fine sand little organics f -L			
						Bottom of	Boring at 5	.0 ft.	
						Notes:			
						*1. Sample obtained with 1-3/8 in. ID split spoon.			
						2. Sample S1 submitted fo	r chemical	analysis.	
10									
								•	
<u> </u>									
<u> </u>									
 25									
		WATER LEVEL	DATA		,	SAMPLE IDENTIFICATION		SUMMARY	
			DEPTH (FT) TO:				OVERBURDEN		
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	0 Open End Rod WATER T Thin Wall Tube ROCK CORED (LIN FT):	(LIN FT):			
			OF CASING	OF NOLE		U Undisturbed Sample S Split Spoon SAMPLES:	SAMPLES:	2\$	
,							BORING NO.	FOIL204653	

	Co	nsulting	YORK, ROCHE Geotechnic	al Engineer	rs,		TEST BORING REPORT		BORING NO. B219
,	PROJECT:	ROT	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	LTING CORPO	ORATION - F	PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
		TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
	TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30	:::	RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						0.5		-ASPHALT-	
	[3 3	\$1	1.0	2.0	Very dense dark brown to bl	ack CINDER -FILL-	PARTICLES AND FRAGMENTS.
	-		4 6	14"/24" S2*	3.0	3.0	Medium stiff brown and bla	ack mottled, .ACUSTRINE-	ORGANIC SILT.
	 - 5 -		3 4 6	24"/24"	5.0]	Loose light brown laminate —layer of medium sand.	ed silty fin	e SAND, with occasional
								ACUSTRINE-	
]				Bottom of	Boring at 5	.0 ft.
							<u>Notes</u> :		
	<u> </u>						*1. Sample obtained with	1-3/8 in. II	o split spoon.
•	<u> </u>						2. Sample S1 submitted f	or chemical	analysis.
	-					-			
	15								
]					
	_								
	<u> </u>								
	— 25 —		UATED IEWEI	DATA			SAMPLE IDENTIFICATION		SUMMARY
		WATER LEVEL DATA DEPTH (FT) TO:				WALL IDENTIFICATION	OVERBURDEN		
	DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	0 Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	
			,	OI CASING	OI NOLE		U Undisturbed Sample S Split Spoon SA		2\$
								BORING NO.	FOIL2 926% 4

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Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B220
PROJECT: CLIENT: CONTRACT	KIK	TH BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
HAMMER W	TYPE NSIDE DIAMETER (IN) AMMER WEIGHT (LB) AMMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
_					1.0	-ASPHAL	T WITH SUB-BA	ASE -
		23 13 11	S1 20"/24"	1.0	2.7	Medim dense dark brown to be trace gravel, oily odor.	black CINDER -FII	
 		10 2 3 5		3.0		Loose brown mottled coarse seams of silty fine sand, a fine sand, little organics	and layer of	AND, with occasional dark brown silty
5 		6	, , ,		-		Boring at 5	.0 ft.
 						Notes: *1. Sample obtained with 1 2. Sample S1 submitted for		·
— 10 — - — - —								
15 								
20	·							
25								
	WATER LEVEL DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME ELAPSED DEPTH (FT) TO:			O Omn End Bed	OVERBURDEN	(LIN FT): 5.0		
DATE		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	U Undisturbed Sample		
						S Split Spoon	SAMPLES:	2\$

	onsulting	YORK, ROCHE G Geotechnic sts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B221		
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
,	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROD		ELEVATION:		
TYPE INSIDE D HAMMER W		(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 1.0 ft.	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
					1.0	-ASPHAL1	T WITH SUB-B	ASE-		
		4 7	S1	1.0		Loose dark brown sandy GRAV	ÆL, trace c -FILL-	inders.		
	-	7		3.0	2.3 3.0	Medium dense dark brown	ORGANIC SIL	т.		
		5 6 6 7	\$2* 24"/24"	3.0 5.0	4.5	Medium dense light brown seams of silt.	laminated f -LACUSTRINE			
5 _		7				Medium dense red-brown sa -GL	andy SILT, t	race fine gravel.		
	}					Bottom of Boring at 5.0 ft.				
		ĺ				Notes:				
						*1. Sample obtained with 1	1-3/8 in. ID	split spoon.		
10]					3. Sample S1 submitted for chemical analysis.				
<u> </u>										
— 15 —										
		}								
						·				
20										
 25										
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE	DEPTH (FT) TO:			O Open End Bod	OVERBURDEN	(LIN FT): 5.0				
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube ROC U Undisturbed Sample		(LIN FT):		
			3		_	S Split Spoon	SAMPLES:	2\$		
							BORING NO.	FOIL 222 1656		

Co	nsulting	YORK, ROCHE Geotechnic ts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B222
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	IAMETER	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger thr asphalt to 0.5 ft.	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		_	61	0.5	0.5	h .	-ASPHALT-	
		5 7 7 7		2.5	2.1	Medium dense dark brown to fragments, and layer of ci		
		5 3 2	\$2 24"/24"	2.5 4.5		Medium stiff dark brown to organicsLA	gray-brown ACUSTRINE-	mottled sandy SILT, trace
5		2				Bottom of	Boring at 4	.5 ft.
		1						
⊢ - 10								
<u> </u>								
								·
15								
		·						
20								
25								
,		WATER LEVEL					SUMMARY	
DATE	TIME	ELAPSED -	BOTTOM	BOTTOM	0 Open End Rod			
			OF CASING	OF HOLE	MATER	T Thin Wall Tube ROCK CORED (LU Undisturbed Sample SAMPLES:	28	
,							BORING NO.	FOI B202 657

Co	nsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B223		
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEI CON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:		
HAMMER W	PE ISIDE DIAMETER (IN) MMER WEIGHT (LB) MMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced auger the asphalt to 1.0 ft	rough	DATUM: START: 25 October 1990 FINISH: 25 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	BLOWS BLOWS NUMBER & DEPTH			SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
					0.7	-α	ONCRETE PAD-			
		20 19	\$1 24"/24"	1.0	2.7	Medium dense dark brown to and particles.	black GRAVE	L, with cinder fragments		
		10 8	\$2*	3.0	2.7	Loose light brown mottled of silt seams and layers, and	coarse to fin	ne SAND, with occasional of silt, little organics.		
	- 2 3 14"/24" 5.0					-1	LACUSTRINE-			
5 		2				Bottom of	Boring at 5	.0 ft.		
	Notes:									
						*1. Sample obtained with 1-/38 in. split spoon.				
						2. Sample S1 submitted for chemical analysis.				
<u> 10</u>										
15										
				,						
_20 _										
_										
—25 — HAYER LEGEL DAYA						SAMPLE IDENTIFICATION		SUMMARY		
,——	WATER LEVEL DATA		H (FT) TO:		SAMPLE IDENTIFICATION	OVERBURDEN				
DATE	TIME	ELAPSED TIME (HR)	воттом	воттом	WATER	O Open End Rod R T Thin Wall Tube ROCK CO		(LIN FT):		
			OF CASING	OF HOLE		U Undisturbed Sample	SAMPLES:	2\$		
,							BORING NO.	FOI B 203 658		

	onsulting	YORK, ROCHE Geotechnic Sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B224
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME CON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	ITEM CASING S			DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
TYPE INSIDE D HAMMER W		(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced auger th asphalt to 1.0 ft	rough	DATUM: START: 26 October 19' FINISH: 26 October 19' DRILLER: D. Richmond H&A REP: W. Lanik
OEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						-ASPHAL	T WITH SUB-B	ASE-
· -		7 5	S1	1.0	1.0	Medium dense brown to dark cinders.		SILT, trace gravel, wi
		8		3.0	3.0		-FILL-	
	_	7 6 7	\$2 18"/24"	5.0		Medium dense gray-brown to SAND, little to trace grave organics layer.	dark brown i el, trace si LACUSTRINE-	mottled coarse to fine lt, with sand, little
<u> </u>	1	7				Bottom of	Boring at 5	.0 ft.
-								
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-	1							
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15								
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-20								
_								
_								
-25 —					•			
	WATER LEVEL DATA				SAMPLE IDENTIFICATION	<u> </u>	SUMMARY	
				H (FT) TO:		_	OVERBURDEN	(LIN FT): 5.0
DATE	TIME	ELAPSED TIME (HR)	PSED O Open End Rod					
			OF CASING	OF HOLE		U Undisturbed Sample	SAMPLES:	2s
						s spirit spoon		FOIL 294 659

Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	`s,		TEST BORING REPORT		BORING NO. B225		
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
I	DRIVE ITEM CASING SAMPLER		CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:				
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile 8-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers the concrete pad 0.8	hrough	DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS		
					0.8	-ca	ONCRETE PAD-			
		9	S1	1.0	1.5	Loose brown gravelly coam	rse SAND. -FILL-			
		9 9	15"/24"	3.0	3.0	Loose dark brown sandy SII		ravel, with cinders.		
_		8 4 -	\$2*	3.0		Lanca deals have account as	-FILL-	on at links be-		
5		3 3	18"/24" S3*	5.0		Loose dark brown ORGANIC S. from 3.0 to 4.0 ft.	ILT, with lay	yer of light brown silt		
		3 5	24"/24"	7.0		Loose light brown silty fir coarse to medium SAND, with	ne SAND, grad	di ng into rganic silt.		
		5			}		Boring at 7			
						Notes: *1. Sample obtained with 1-3/8 in. ID split spoon.				
_ 10					-					
						2. Sample S1 submitted fo	or chemical a	analysis.		
		ľ								
— 15 —										
25			_							
,		WATER LEVEL			SAMPLE IDENTIFICATION SUMMARY					
DATE	TIME	ELAPSED -		H (FT) TO:	O Open End Rod					
		TIME (HR)	BOTTOM OF CASING	OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample S Split Spoon	ROCK CORED SAMPLES:	(LIN FT): 3s		
						S Split Spoon	BORING NO.	FOI B205 660		
							BOKING NO.	FUI BZ## 00U		

Co	nsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	`s,		TEST BORING REPORT		BORING NO. B226	
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SMET CON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1	ITEM CASING SAMPLE			DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	hrough	DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
					1.0	-ASPHAL	T WITH SUB-B	ASE-	
		14 15	S1	1.0		Medium dense dark brown coa with metal fragments.	arse to fine -FILL		
		15 16	18"/24" \$2*	3.0	2.5	Medium dense dark brown san Loose dark brown sandy ORGA	ANIC SILT, t		
 		3 3	18"/24"	5.0	5.0	Loose light brown medium to	LACUSTRINE- 	with occasional silt	
		4 5	s3 *	5.0	6.5	seam.	LACUSTRINE-		
_ =		6 8	22"/24"	7.0		Medium dense red-brown sandy SILT, trace gravelGLACIAL TILL- Bottom of Boring at 7.0 ft.			
10						Notes:			
						*1. Sample obtained with 1	1-3/8 in ID :	split spoon.	
						2. Sample S1 submitted fo	or chemical a	analysis.	
 15									
20									
25							1		
		WATER LEVEL		H (FT) TO:		SAMPLE IDENTIFICATION	OVERBURDEN	SUMMARY (LIN FT): 7.0	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	воттом	WATER T Thin Wall Tube ROCK CORED (LIN FT):				
		,	OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon SAMPLES:	SAMPLES:	3\$	
							BORING NO.	FOIL 2026 61	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B227 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ELEVATION: ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE Auger BIT TYPE: START: 25 October 1990 INSIDE DIAMETER (IN) 1-3/8 ---FINISH: 25 October 1990 4-1/4 DRILL MUD: HAMMER WEIGHT (LB) 140 ---OTHER: Advanced augers through DRILLER: D. Richmond HAMMER FALL (IN) 30 asphalt to 1.0 ft. H&A REP: W. Lanik CASING SAMPLER SAMPLE SAMPLE DEPTH STRATA NUMBER & BLOWS BLOWS DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-2 1.0 1.2 S1 2 Loose gray-brown to light brown mottled silty coarse to fine 22"/24" 3.0 SAND, with layer of organic rich silt. 8 -LACUSTRINE-Bottom of Boring at 3.0 ft. - 15 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0 DATE TIME **ELAPSED** Open End Rod BOTTOM WATER ROCK CORED (LIN FT): TIME (HR) BOTTOM T Thin Wall Tube OF CASING OF HOLE Undisturbed Sample S SAMPLES: 18 Split Spoon BORING NO. FOI**E264**662

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				s,		TEST BORING REPORT	BORING NO. B228			
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers to	START: 25 Octobe FINISH: 25 Octobe				
DEPTH (FT)	BLOWS BLOWS NUMBER & C			SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	VISUAL CLASSIFICATION AND REMARKS			
		2 3 -	\$1	0.5	1.2	Loose dark brown GRAVEL, tr staining, oily odor.	race silt, trace organics, with black			
		5 5	24"/24"	2.5			Foft dark brown mottled ORGANIC SILT, trace sand, with layer of light brown silt. -LACUSTRINE- Bottom of Boring at 2.5 ft. ste: Sample S1 submitted for chemical analysis.			
			1							
 5						Bottom of				
						Note: Sample S1 submitted				
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	WATER LEVEL DATA					SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED TIME (HR)		H (FT) TO:		0 Open End Rod	OVERBURDEN			
			OF CASING	OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample	ROCK CORED SAMPLES:	(LIN FT): 1S		
						S Split Spoon	BORING NO.	FOIL gg#8 63		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B229		
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCE	ELEVA	ELEVATION:		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Truck Mounted BIT TYPE: DRILL MUD: OTHER: Advanced augers through asphalt to 1.0 ft.		DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik			
			SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS				
		-			1.0	-ASPHALT	WITH SUB-B	ASE -		
	The second secon					1.5 to 1.8 ft.				
		3 3	24"/24"	5.0	3.5	-FILL- Loose gray-brown to brown mottled coarse to fine SAND, little to trace gravel, trace silt, with layer of silt, little brganics. -LACUSTRINE- Bottom of Boring at 5.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis.				
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	WATER LEVEL DATA					SAMPLE IDENTIFICATION		SUMMARY		
	TIME	ELAPSED -	DEPTH (FT) TO:				OVERBURDEN	(LIN FT): 5.0		
DATE			BOTTOM B	BOTTOM	WATER		ROCK CORED	(LIN FT):		
			OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	2\$		
						BORING NO. FOIL 802664				

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists						TEST BORING REPORT		BORING NO. B230	
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.								FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1 TEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:	
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)			Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers asphalt to 0.5	through	DATUM: START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
			SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	SIFICATION AND REMARKS		
		12	61	0.5	0.5	-ASPHAL	T WITH SUB-B.	ASE -	
]	12 7 7	S1 14"/24"	2.5		Medium dense dark brown to with cinders. Same.	black grave -FILL-	lly coarse to fine SAND,	
		5 3 2	s2 20"/24"	2.5	3.0		rown mottled coarse to fine SAND, ace silt, with layer of sand, little LACUSTRINE- ine SAND, with frequent seams of nal seam of silt. LACUSTRINE-		
5	}	4 5	\$3	4.5	5.3				
 		6	24"/24"	6.5] "	coarse sand, and occasion			
]				Bottom of	Boring at 6	.5 ft.	
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 -25 -									
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
	TIME	ELAPSED TIME (HR)		H (FT) TO:		O Open End Rod T Thin Wall Tube	OVERBURDEN		
DATE			BOTTOM	BOTTOM	WATER		ROCK CORED	(LIN FT):	
			OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	3s	
,					BORING			FOIL 2246 65	

H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B231 Consulting Geotechnical Engineers, TEST BORING REPORT Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II 70185-42 FILE NO. PROJECT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CLIENT: LOCATION: See Plan CONTRACTOR: PARRATT-WOLFF, INC. DRIVE CORE DRILLING EQUIPMENT & PROCEDURES BARREL **ELEVATION:** CASING SAMPLER ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: BIT TYPE: START: 26 October 1990 SS TYPE Auger FINISH: 26 October 1990 INSIDE DIAMETER (IN) 4-1/4 2-3/8 ---DRILL MUD: DRILLER: D. Richmond ---140 OTHER: Advanced augers through HAMMER WEIGHT (LB) H&A REP: W. Lanik 30 --asphalt to 1.0 ft. HAMMER FALL (IN) ---STRATA SAMPLER SAMPLE SAMPLE DEPTH CASING BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS BLOWS PER 6 IN RECOVERY (FT) (FT) (FT) PER FT -ASPHALT WITH SUB-BASE-1.0 15 1.0 Medium dense brown to red-brown sandy SILT, little to trace s1 gravel, trace cinders. 15 -FILL-16 20"/24" 3.0 3.3 5 S2* 3.0 2 Loose gray-brown to dark brown mottled coarse to fine SAND, little to trace gravel, trace silt, with of sand, little 18"/24" 2 5.0 organics. 5.0 5.7 2 s3* | Same. 3 24"/24" -LACUSTRINE-5 7.0 9 Medium dense light brown medium to fine SAND, with frequent layers of silt. -LACUSTRINE-Bottom of Boring at 7.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 is submitted for chemical analysis. 15 - 20 . 25 SAMPLE IDENTIFICATION SUMMARY WATER LEVEL DATA 7.0 DEPTH (FT) TO: OVERBURDEN (LIN FT): TIME **ELAPSED** Open End Rod DATE TIME (HR) BOTTOM BOTTOM WATER T Thin Wall Tube ROCK CORED (LIN FT): OF HOLE OF CASING Undisturbed Sample SAMPLES: 38 S Split Spoon BORING NO. FOIL**2046**66

	Geologis	sts and Hydr	al Engineer ogeologists	·s,		TEST BORING REPORT	BORING NO. B232
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCE	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(1N) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Truck BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 0.5 ft	START: 26 October 1990 FINISH: 26 October 1990 DRILLER: D. Richmond
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIF	ICATION AND REMARKS
		4.4		0.5	0.5	-ASPHALT V	VITH SUB-BASE-
		9 8	S1 14"/24"	0.5 2.5		Medium dense light brown moti gravel, with wood fragments.	led medium to fine SAND, trace -FILL-
_		10	S2	2.5	2.6	Loose dark brown fine sandy (ORGANIC SILT.
		3 3 _	20"/24"	4.5		-LAC	CUSTRINE-
<u> </u>		3				Bottom of Bo	oring at 4.5 ft.
					}		
- 4							
10							
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- 15							
_20 _			[]		•		
_ 25 							
	1	WATER LEVEL	DATA			SAMPLE IDENTIFICATION	SUMMARY
DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		0 Open End Rod	VERBURDEN (LIN FT): 4.5
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube R U Undisturbed Sample	OCK CORED (LIN FT):
						S Split Spoon S	AMPLES: 2S

	onsulting	YORK, ROCHE g Geotechnic sts and Hydr	al Enginee	rs,		TEST BORING REPORT		BORING NO. B233	
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & I		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
	ITEM CASING DRIVE SAMPLER			CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:		
TYPE INSIDE D	NSIDE DIAMETER (IN) AMMER WEIGHT (LB) AMMER FALL (IN)		Auger 4-1/4 	ss 2-3/8 140 30		BIT TYPE: DRILL MUD: OTHER: Advanced augers	TYPE: Mobile B-57, Truck Mounte START: 26 Octob		
DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
					1.0	-ASPHAL	T WITH SUB-B	ASE-	
		18 20	\$1	1.0	1.0	Medium dense dark brown mo cinders.	ttled sandy :	SILT, little gravel, with	
		15 15	24"/24" S2*	3.0	2.7	Stiff dark brown sandy ORG	ANIC SILT, t	race gravel.	
		6	24"/24"		4.5		-LACUSTRINE-		
—5 —		7			1	Medium dense brown mottle gravel, trace silt	ed coarse to LACUSTRINE-	fine SAND, little	
		}				Bottom of	Boring at 5.0 ft.		
						Notes:			
						*1. Sample obtained with	1-3/8 in. ID	split spoon.	
— 1 0 —]				2. Sample S1 submitted for			
— 15 —									
_									
· _									
– 20 —									
 25									
-25		WATER LEVEL	DATA			SAMPLE IDENTIFICATION	Ī	SUMMARY	
				H (FT) TO:	_	STATE TOURS IN TENTION	OVERBURDEN		
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	воттом	WATER	O Open End Rod T Thin Wall Tube	ROCK CORED		
			OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	2\$	
							BORING NO.	FOIL s204 668	

	onsulting	YORK, ROCHE Geotechnic ts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B234	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
	TEM		CASING	DRIVE SAMPLER		DRILLING EQUIPMENT & PROC	ELEVATION:		
HAMMER &	TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger SS 4-1/4 2-3/8 140 30		3/8 40	RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	hrough	DATUM: START: 26 October 199 FINISH: 26 October 199 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VI SUAL CLASS	IFICATION AN	D REMARKS	
					1.0	-ASPHALT	T WITH SUB-B	ASE-	
_]	28 30	S1	1.0] "."	Dense red-brown sandy SILT,	, little gra	vel.	
_] .	58 54	20"/24"	3.0	3.0		-FILL-		
_		12 16	S2*	3.0	5.0	Dense brown coarse to fine	SAND, with	concrete pieces.	
5		25 42	6"/24"	5.0			-FILL-		
 						Bottom of Notes:	Boring at 5	.0 ft.	
						*1. Sample obtained with 1	I-3/8 in. ID	split spoon.	
						2. Sample S1 submitted fo	or chemical a	analysis.	
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- 20									
- 25 <i>-</i>									
	<u> </u>	ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
				H (FT) TO:	_		OVERBURDEN	(LIN FT): 5.0	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED		
					S Split Spoon SAMPLES:				

	Geologis	ts and Hydro	al Engineer ogeologists	s,		TEST BORING REPORT		BORING NO. B235
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:
HAMMER W	NSIDE DIAMETER (IN) AMMER WEIGHT (LB) AMMER FALL (IN)		Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER:	ck Mounted	DATUM: START: 29 October 199 FINISH: 29 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
		5	S1	0.0	0.4	Medium dense brown gravell	y coarse to	medium SAND.
_		13 13	20"/24"	2.0		Medium dense black CINDERS	and ASH.	
		9	\$2	2.0		Same, except very loose.		
		2 1 2	8"/24"	4.0		Same.	-FILL-	
		5 4	S3	4.0	4.4	Medium stiff light brown mo	ittled SILT.	trace coarse to medium
		⁷ 4	24"/24"	6.0		sand, with layer coarse to	medium sand ACUSTRINE-	from 4.4 to 5.0 ft.
_						Bottom of	Boring at 6	.0 ft.
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 20								
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—25 —								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED	DEPT	H (FT) TO:		0 Open End Rod	OVERBURDEN	(LIN FT): 6.0
UNIE	ITME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
				-,		S Split Spoon	SAMPLES:	3\$

Г		Consultin	YORK, ROCHE g Geotechnic sts and Hydi	cal Engineer	rs,		TEST BORING REPORT		BORING NO. B236
, ı	PROJEC CLIENT CONTRA	: NI	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & [PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan 15 ft. NW
		ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
		DIAMETER WEIGHT FALL	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER:	ruck Mounted	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	OEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
	. ,		3 5	S1	0.0		Loose gray-brown coarse sa	ndy GRAVEL.	
L		_	3 5	10"/24"	2.0		Same.	-FILL-	
-			6 2 1 1	s2 20"/24"	2.0	2.4	Very loose dark-brown to b layer of silt, little orga	rown mottled nics from 3.2 LACUSTRINE-	fine sandy SILT, with 2 to 3.8 ft.
Ł	_5 -	_					Bottom of	Boring at 4	.0 ft.
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	- 25 —								
			WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
	DATE	TIME	ELAPSED		H (FT) TO:		0 Open End Rod	OVERBURDEN	
			TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample	ROCK CORED	
							S Split Spoon	SAMPLES:	2\$
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H & A OF NEW YORK ROCHESTER, NEW YORK

ESTIMATED	UNIT COST	\$275-360/Ton	\$195/Ton	\$104/Ton (if treat > 1,000 cu. yd.)	\$75/Ton	\$36-44/Ton
	REMARKS	I	Bulk density increased by 21% End product is a dense, low porosity homogeneous mass of soil.	Wastes immobilized and bound into a hardened, leach-resistant, concrete-like solidified mass.	20%-50% increase in volume of excavated waste. Effective in reducing concentration of lead in extracts of TCLP by 94-99%. No significant volatilization of PCBs during treatment process.	Isolation technology.
E VI – PLANT 2 MAL TECHNOLOGIES of 2	APPLICABILITY	Soils w/high metals, CLP metals and PCBs.	Soils/sludges contaminated with metals and PCBs.	Soils, groundwater and sludges with metals, CN, ammonia and high molecular weight organics.	Soils, sludges with heavy metals, high molecular weight organics.	Most wastes except non- polar organics.
TABLE VI ROTH BROS. – PLANT 2 ALTERNATIVE REMEDIAL TECHNOLOGIES Page 1 of 2	SYNOPSIS OF METHOD	Excavate soils and dispose as hazardous waste/special waste. Backfill/revegetate.	Treat soils using 36" diameter circular bore, injecting solidification product (a cement-organic clay mix) into soils. An overlapping circular pattern is conducted over the affected areas.	Solidification and stabilization with silicate compounds. Material is excavated, mixed with silicates, and placed in confining pit on site or cast into molds for offsite disposal.	Solidification and stabilization of excavated soils using soluble silicates and silicate setting agents.	Cover affected area with low permeability cap to prevent infiltration. Surround with low permeability bentonite shurry walls.
	DEVELOPER		GeoCon	(2) Silicate Technology Corp.	Chem Fix Environmental Services, Inc.	!
	METHOD NAME	Offsite Disposal	In-Situ Solidification	Silicate Stabilization		Contain In-Place with cap/slurry walls
	METHOD NAM	Offsite Disposal	In-Situ Solidific	Silicate Stabiliz		Contain In-Plac with cap/slurry

	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B237	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:	
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		(LB)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	rough	DATUM: START: 29 October 199 FINISH: 29 October 199 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS	
						-ASPHALT Medium dense gray-brown san	WITH SUB-B	ASE-	
		13 19	S1	1.0	1.7	Medium dense brown gravelly		 fine SAND. trace silt.	
_		9	18"/24"	3.0			-FILL-	,,,,,,	
		4 6	s2*	3.0		Suite, except toose and true	-FILL-		
 		3 2	12"/24"	5.0	4.8	Medium stiff dark brown to		ORGANIC SILT.	
— > —		2	s3*	5.0		Mediali Stiff daik blown to	DI ORIT SAIRLY	ORGANIC SIEI:	
		2 3 7	11"/24"	7.0		-L	ACUSTRINE-		
- -		7				Bottom of	Boring at 7	.0 ft.	
						Notes:			
<u> </u>						*1. Sample obtained with 1	-3/8 in. ID	split spoon.	
	-					2. Sample S1 submitted fo	or chemical	analysis.	
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		WATER LEVEL	L Data		<u> </u>	SAMPLE IDENTIFICATION		SUMMARY	
				H (FT) TO:		2 22 22 23 24 13 24	OVERBURDEN		
DATE	TIME	ELAPSED - TIME (HR)	BOTTOM	воттом	WATER	O Open End Rod T Thin Wall Tube			
			OF CASING	OF HOLE	WILLIAM.	U Undisturbed Sample S Split Spoon	ROCK CORED (LIN FT): SAMPLES: 3S		
							BORING NO.	F01 2337 673	

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		onsultin	YORK, ROCHE g Geotechnic sts and Hydr	al Enginee	rs,		TEST BORING REPORT		BORING NO. B238
_	PROJECT CLIENT: CONTRAC	NI	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & I		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
		TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
	HAMMER V	INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t asphalt to 1.0 ft	hrough	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						1.0	-ASPHAL	T WITH SUB-B.	ASE-
			13 9	S1	1.0	·	Medium dense brown to ligh fine SAND, with wood fragm		led gravelly medium to
		}	11 8		3.0	4		-FILL-	
			2 2 2	\$2* 24"/24"	3.0	3.2	Soft dark brown sandy ORGAN	NIC SILT, wi	th layer of brown sandy
	5		2		3.0	1	SILT, from 4.5 to 5.0 ft.	LACUSTRINE-	Г
							Bottom of	Boring at 5	.0 ft.
	_	ļ							
	<u> </u>]		Notes:		
							*1. Sample obtained with	1-3/8 in. ID	split spoon.
	10 			1			2. Sample S1 submitted for	or chemical a	anlaysis.
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f		<u> </u>	JATER LEVEL	DATA	<u> </u>		SAMPLE IDENTIFICATION		SUMMARY
1	DA 75	77115	El ADOSS	DEPT	H (FT) TO:		0 0 1 2 1	OVERBURDEN	(LIN FT): 5.0
	DATE	TIME	ELAPSED TIME (HR)	BOTTOM	BOTTOM	WATER	0 Open End Rod T Thin Wall Tube	ROCK CORED	(LIN FT):
ŀ				OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	2s
L								BORING NO.	FOIL 204 674

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H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B239 TEST BORING REPORT Consulting Geotechnical Engineers, Geologists and Hydrogeologists 70185-42 ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. PROJECT: SHEET NO. 1 OF 1 NIXON HARGRAVE DEVANS & DOYLE CLIENT: LOCATION: See Plan CONTRACTOR: PARRATT-WOLFF, INC. DRILLING EQUIPMENT & PROCEDURES DRIVE CORE CASING SAMPLER BARREL **ELEVATION:** ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: BIT TYPE: START: 29 October 1990 TYPE Auger FINISH: 29 October 1990 2-3/8 DRILL MUD: 4-1/4 INSIDE DIAMETER (IN) DRILLER: D. Richmond ---140 ---OTHER: Advanced augers through HAMMER WEIGHT (LB) 30 asphalt to 1.0 ft. H&A REP: W. Lanik HAMMER FALL (IN) SAMPLE SAMPLER SAMPLE STRATA DEPTH CASING VISUAL CLASSIFICATION AND REMARKS NUMBER & **DEPTH** CHANGE BLOWS BLOWS (FT) PER 6 IN RECOVERY (FT) (FT) PER FT -ASPHALT WITH SUB-BASE-1.0 Medium dense red-brown to brown sandy SILT, little gravel, with 1.0 9 S1 14 cinders. 18"/24" 3.0 -FILL-12 11 Same, except loose with wood fragments. 3.0 8 **S2** 8 15"/24" 5.0 -FILL-**S3*** 5.1 Medium dense red-brown to brown sandy SILT, trace fine gravel, 5 5 24"/24" 7.0 with dark brown layer of silt, little organics from 5.1 to -5.6 ft. 5 -LACUSTRINE-Bottom of Boring at 7.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Samples S1 and S2 submitted for chemical analysis. 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY OVERBURDEN (LIN FT): 7.0 DEPTH (FT) TO: DATE Open End Rod TIME ELAPSED 0 ROCK CORED (LIN FT): --BOTTOM WATER Thin Wall Tube TIME (HR) BOTTOM Т OF CASING OF HOLE u Undisturbed Sample SAMPLES: 38 Split Spoon S BORING NO. FOIL204675

Co	nsultin	YORK, ROCHE G Geotechnic sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B240
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & [PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I.	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER WI HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers asphalt to 1.0	through	DATUM: START: 26 October 19 FINISH: 26 October 19 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						-ASPHAL	T WITH SUB-B	ASE-
		7 10 10	S1 24"/24"	1.0	1.2	Medium dense red-brown san trace organics.	dy SILT, lit	tle to trace gravel,
		9 8 8	\$2 18"/24"	3.0	3.9	Same.	LACIAL TILL-	_
5		6		3.0		Medium dense brown coars	e to fine SA	ND, trace gravel, trace
-						-	LACUSTRINE-	
						Bottom of	Boring at 5	.0 ft.
- 10 —								
· -								
-15								
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4								
-20 —	ľ]					
\dashv								
-			l 1					
-								
<u>_</u> –								
- 25 —		ATER LEVEL	DATA			SAMPLE IDENTIFICATION	T	SUMMARY
	Ť			H (FT) TO:		STATE TOURITH TOUTION	OVERBURDEN	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
						S Split Spoon	SAMPLES:	2\$
							BORING NO.	FOIL 554 676

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B241
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:
HAMMER W	TYPE (NSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	rough	DATUM: START: 26 October 199 FINISH: 26 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
					0.5	-ASPHALT	WITH SUB-B	ASE-
 		15 15 14 14 6 7	s2*	2.5		Medium dense red-brown sand trace metal fragments and a Same, except little to trac	sh. -FILL-	tle to trace gravel,
 5		7 6 6	s3*	4.5	6.0	Same.	-FILL-	
_]		7	16"/24"	6.5	8.0	Medium dense light brown	medium SAND	, with trace organics.
						Bottom of	Boring at 6	.5 ft.
 10 -						Notes:	7.0	
						*1. Sample obtained with 1 2. Sample S1 submitted fo		
— 15 ——								
20 								
25								
	'	WATER LEVEL				SAMPLE IDENTIFICATION	OVERBURDEN	SUMMARY (LIN FT): 6.5
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
						S Split Spoon	SAMPLES:	3\$

H&A Co	onsulting	YORK, ROCHE Geotechnic sts and Hydro	al Engineer	`s,		TEST BORING REPORT		BORING NO. B242
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II	-		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t asphalt to 1.0 ft	hrough	DATUM: START: 26 October 199 FINISH: 26 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
					1.0	-ASPHAL	T WITH SUB-BA	ASE-
		13	S1	1.0	1.0	Medium dense red-brown san	dy SILT, lit	tle gravel.
		14 15	24"/24"	3.0			-FILL-	
	•	11	\$2	3.0		Same.		
		14 15	3"/24"	5.0			-FILL-	
5	1	16				Bottom of	Boring at 5	.0 ft.
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—10 —								
						-		
— 15 —								
				ĺ				
20	ĺ							
- 25								
		ATER LEVEL I	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELADOED	DEPTI	(FT) TO:		O Open End Red	OVERBURDEN	(LIN FT): 5.0
DATE	ITME	ELAPSED TIME (HR)	BOTTOM	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube	ROCK CORED	(LIN FT):
			OF CASING	OF HULE		U Undisturbed Sample S Split Spoon	SAMPLES:	2\$
							BORING NO.	8242 FOIL204678

Co	nsulting	YORK, ROCHES Geotechnica Sts and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B243
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEL KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		(LB)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t asphalt to 1.0 ft	hrough	DATUM: START: 29 October 199 FINISH: 29 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						-ASPHAL	T WITH SUB-B	ASE-
_		14	S1	1.0	١	Medium dense gray-brown co	arse to fine	sandy GRAVEL.
		10 8 6	14"/24" \$2	3.0	1.8	Loose black and brown mott fragments and ash. Same, except medium dense.		ttle gravel, with cinder
		10 14	20"/24"	5.0			-FILL-	
5		7 3 5 5	\$3* 24"/24"	5.0 7.0	5.2	Medium dense light brown m coarse to medium sand from		
		6	24.724.	7.0		h	LACUSTRINE-	
						L	Boring at 7	.0 ft.
10						Notes:		
						*1. Sample obtained with	1-3/8 in. ID	split spoon.
						2. Samples S1 and S2 subr	mitted for ch	nemical analysis.
_ 15 _								
. 4			ĺ					
. 4								
-20 —								
_								
-								
_								
-25 -						-	1 -	
	1	ATER LEVEL I		. /		SAMPLE IDENTIFICATION	OVER BURNEY	SUMMARY 7.0
DATE	TIME	ELAPSED TIME (HR)	BOTTOM DF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube	OVERBURDEN ROCK CORED	
			OF CHOING	OF NOLE		U Undisturbed Sample S Split Spoon SAMPLES:	3s	
							BORING NO.	FO P2 04679

Co	nsulting	YORK, ROCHES Geotechnicats and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B244	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCE		ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers thr asphalt to 1.0 ft.		DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIF	ICATION AND	D REMARKS	
						-ASPHALT	WITH SUB-BA	ASE -	
		5 6 7	S1 18"/24"	1.0	1.0	Medium dense dark brown SILT ash.	, trace gra	avel, with cinders and	
 		8 33 25	\$2	3.0		Dense dark brown gravelly co- with cinders and ash.		ne SAND, trace silt,	
5		11 4 WOH	22"/24" S3	5.0		Very loose dark brown gravel		ith ash.	
 		WOH 4	24"/24"	7.0	6.0	-FILL- Medium stiff light to dark brown laminated SILT. -LACUSTRINE-			
						Bottom of Bo	oring at 7.	.0 ft.	
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION	_ -	SUMMARY	
DATE	T1145	ELADOFO	DEPT	H (FT) TO:			OVERBURDEN	(LIN FT): 7.0	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	U Undisturbed Sample S Split Spoon SAMPLES:	(LIN FT): 3s		
							BORING NO.		
, <u> </u>			_					FOIL 2646 80	

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B245	
PROJECT: :LIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	_	ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUO: OTHER: Advanced augers th asphalt to 1.0 ft.	ırough	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS	
						-ASPHALT	WITH SUB-B	ASE-	
		25 20	S1	1.0	1.2	Medium dense dark brown san	ndy SILT, li	ttle gravel, with cinders	
	20 17 12 7 24"/24" 3.0				3.5	and wood fragments. Same, except with black lay	-FILL-		
		2 1	15"/24"	5.0		Very loose light brown mott	iled SILT.		
5 -		WOH 1	s3*	5.0	5.0	ի -ւ	ACUSTRINE-		
		1 6 7	17"/24"	7.0		Loose light brown to black	mottled fine ACUSTRINE-	e SAND.	
						Bottom of E	Boring at 7.	0 ft.	
10 15 20 25						Notes: *1. Samples obtained with 2. Sample S1 submitted fo			
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
,	DEPTH (FT) TO:			O Open End Red	OVERBURDEN	(LIN FT): 7.0			
DATE	TIME	ELAPSED - TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon	Thin Wall Tube ROCK CORED (LIN FT): -		
						BORING NO.			

Con	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B246	
PROJECT: CLIENT: CONTRACTO	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
11	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:	
TYPE INSIDE DI HAMMER WE HAMMER FA	AMETER	(IN) (LB)	Auger 4-1/4 	SS 1-3/8 140 30		BIT TYPE: DRILL MUD: OTHER: Advanced augers th	MUD:		
	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		-			4.0	-ASPHALT	WITH SUB-B	ASE-	
		13 8 9	s1 7"/24"	1.0	1.0	Medium dense dark brown coa gravel, with cinders and wo			
		5 6	s2	3.0	3.0	Medium dense red brown sand	y SILT. -FILL-		
5		6 14	18"/24"	5.0	4.3	Medium dense light brown m	medium to fi	ne SAND.	
\vdash \dashv						Bottom of Boring at 5.0 ft.			
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	,	JATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
			DEPT	H (FT) TO:	OVERBURDEN (LIN FT): 5.0	(LIN FT): 5.0			
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	U Undisturbed Sample S Split Spoon SAMPLES: 2S			
,							BORING NO.	B246 FOIL204682	

		onsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B247
	PROJECT: CLIENT: CONTRACT	KIN	TH BROS. SMEL KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
	TYPE			SS 2-3/8 140		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t asphalt to 1.0 ft	hrough	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
						1.0	-ASPHAL	T WITH SUB-B	ASE-
			13 31	S1	1.0	'	Dense dark brown gravelly	SILT, little	coarse to fine sand.
		<u> </u>	29 24	2"/24"	3.0		Same, except very dense.	-FILL-	
ŀ			7 7	\$2 *	3.0	3.5	Medium dense red-brown san	dy SILT, trad	ce gravel, trace
ŀ	5		6 5	20"/24"	5.0		organics.	LACIAL TILL-	П
ŀ							Bottom of	Boring at 5	.0 ft.
ł									
ŀ							Note:		
ł							*1. Sample obtained with	1-3/8 in. II	O split spoon.
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	_ 25 _								
F		1	JATER LEVEL D	DATA			SAMPLE IDENTIFICATION		SUMMARY
	DATE	TIME	ELAPSED -	DEPTI	(FT) TO:		(LIN FT): 5.0		
	DATE	TIME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod I Thin Wall Tube U Undisturbed Sample	ROCK CORED	(LIN FT):
+				- CAUTHU	3. NOLE		S Split Spoon	SAMPLES:	2\$
Ĺ			<u> </u>	***				BORING NO.	B247 FOIL204683

	nsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO.	B248
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. SHEET NO. LOCATION:	70185-42 1 OF 1 See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:	
TYPE INSIDE D HAMMER W	EIGHT	(IN) (LB) (IN)		SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Trubil BIT TYPE: DRILL MUD: OTHER:	uck Mounted	DATUM: START: 2 FINISH: 2	6 October 1990 6 October 1990 D. Richmond
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS			
		11 12 10	\$1 14"/24"	0.0	2.0	Medium dense dark brown co- with cinders and wood frago		SAND, litt	le gravel,
		10 6	\$2 19"/24"	2.0	2.0	Medium dense red-brown sandy SILT, trace gravel, with occasional layers of dark brown organic siltGLACIAL TILL-			
		10				Bottom of	Boring at 4	.0 ft.	
— 10 — -				1	,				
— 15 — 									
—20 <i>-</i> —									
 -25 -						•			
	······································	ATER LEVEL I	DATA			SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED -	DEPT	(FT) TO:		OVERBURDEN (LIN FT):	4.0		
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube ROCK CORED (U Undisturbed Sample S Split Spoon SAMPLES:		(LIN FT):	 2s
							BORING NO.		8248 OIL 204684

Co	nsulting	YORK, ROCHE Geotechnic ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B249
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II		•	FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:
TYPE INSIDE D IAMMER W HAMMER F		(IN) (LB) (IN)		SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER:	uck Mounted	DATUM: START: 26 October 199 FINISH: 26 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
EPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AND	D REMARKS
· -		9 11 13	S1 18"/24"	0.0		Medium dense dark brown sar ash layer.	ndy SILT, tra	ace fine gravel, with
_		14 14	s2	2.0	2.0	Medium dense red-brown sand	y SILT, litt	tle to trace gravel.
		12 12	24"/24"	4.0		-GI	ACIAL TILL-	
		14 12	s3	4.0		Same, with occasional dark		of organic sandy silt.
5		12 1 0	16"/24"	6.0			ACIAL TILL-	
_		9				Bottom of	Boring at 6.	.0 ft.
- 10								
 -25								
	,	ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DEPTH (FT) TO:		OVERBURDEN	(LIN FT): 6.0					
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED (LIN FT):	
						S Split Spoon SAMPLES:	3\$	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B250 Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 PROJECT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL **ELEVATION:** ITEM Mobile B-57, Truck Mounted DATUM: RIG TYPE: BIT TYPE: 29 October 1990 SS START: INSIDE DIAMETER (IN) ---2-3/8 ---DRILL MUD: ---FINISH: 29 October 1990 ---DRILLER: D. Richmond 140 OTHER: HAMMER WEIGHT (LB) ---H&A REP: W. Lanik HAMMER FALL (IN) 30 SAMPLE SAMPLE DEPTH CASING SAMPLER STRATA BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS BLOWS PER 6 IN RECOVERY (FT) PER FT (FT) (FT) Dense dark brown sandy GRAVEL, with wood fragments and 0.0 **S1** 6 10 trace cinders. 24 22"/24" 2.0 -FILL-30 18 s2* 2.0 2.5 Medium dense red-brown to dark brown mottled SILT, little to 2 2 15"/24" 4.0 trace sand. Same. s3* 4.0 -LACUSTRINE-3 3 5.0 24"/24" 6.0 Loose light brown fine sandy SILT. 8 -LACUSTRINE-Bottom of Boring at 6.0 ft. Notes: *1. Samples obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analyses. 20 SAMPLE IDENTIFICATION SUMMARY WATER LEVEL DATA 6.0 DEPTH (FT) TO: OVERBURDEN (LIN FT): Open End Rod DATE TIME **ELAPSED** 0 ROCK CORED (LIN FT): TIME (HR) BOTTOM BOTTOM WATER Ţ Thin Wall Tube OF HOLE U Undisturbed Sample OF CASING 38 SAMPLES: S Split Spoon BORING NO. FOIL204686

H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B251 TEST BORING REPORT Consulting Geotechnical Engineers, Geologists and Hydrogeologists 70185-42 FILE NO. PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II SHEET NO. 1 OF 1 CLIENT: NIXON HARGRAVE DEVANS & DOYLE LOCATION: See Plan CONTRACTOR: PARRATT-WOLFF, INC. DRILLING EQUIPMENT & PROCEDURES DRIVE CORE BARREL **ELEVATION:** CASING SAMPLER ITEM Mobile B-57, Truck Mounted DATUM: RIG TYPE: BIT TYPE: START: 29 October 1990 Auger SS TYPE FINISH: 29 October 1990 2-3/8 ---DRILL MUD: ---INSIDE DIAMETER (IN) 4-1/4 DRILLER: D. Richmond 140 ••• OTHER: HAMMER WEIGHT (LB) 30 H&A REP: W. Lanik HAMMER FALL (IN) SAMPLER SAMPLE STRATA CASING SAMPLE DEPTH VISUAL CLASSIFICATION AND REMARKS CHANGE DEPTH BLOWS BLOWS NUMBER & (FT) PER 6 IN RECOVERY (FT) (FT) PER FT Dense dark brown sandy GRAVEL, with cinders and ash. 17 **S1** 0.0 19 -FILL-14"/24" 2.0 21 30 2.0-3.0 No Recovery. NR -FILL-50 Bottom of Boring at 3.0 ft. Notes: *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Encountered obstruction from 2.0 ft. to 3.0 ft., auger refusal at 3.0 ft. 3. Sample S1 submitted for chemical analysis. 15 20 25 SUMMARY WATER LEVEL DATA SAMPLE IDENTIFICATION OVERBURDEN (LIN FT): 3.0 DEPTH (FT) TO: Open End Rod TIME **ELAPSED** DATE ROCK CORED (LIN FT): --Thin Wall Tube BOTTOM WATER TIME (HR) BOTTOM T OF CASING OF HOLE Undisturbed Sample 25 **SAMPLES:** S Split Spoon BORING NO. FOIL 204687

Co	nsulting	ORK, ROCHES Geotechnica ts and Hydro	l Engineer	s,		TEST BORING REPORT		BORING NO. B252
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I.	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCED		ELEVATION:
HAMMER W	PE NSIDE DIAMETER (IN) AMMER WEIGHT (LB) AMMER FALL (IN)			\$\$ 2-3/8 140 30		RIG TYPE: Mobile B-57, Truck BIT TYPE: DRILL MUD: OTHER:	(Mounted	DATUM: START: 29 October 199 FINISH: 29 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFI	CATION AND	D REMARKS
	-	16 20 18 20 7	\$1 21"/24" \$2*	2.0	1.8	Medium dense red-brown sandy	s. -FILL- 	
 5 		7 10 4 4 5 5	20"/24" NR S3*	4.0 4.0 6.0	6.5	No Recovery. Dense brown sandy GRAVEL.	-FILL-	
		10 8 8	8"/24"	8.0	0.5	Medium dense light brown medi -LACUST Bottom of Bo	TRINE-	
- 10						Notes: *1. Sample obtained with 1-3 2. Sample S1 submitted for		
	3	ATER LEVEL	DATA			SAMPLE IDENTIFICATION	· · · · · · · · · · · · · · · · · · ·	SUMMARY
DATE	TIME	ELAPSED - TIME (HR)	DEPT BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample		(LIN FT): 8.0 (LIN FT): 3S
						• • • • • • • • • • • • • • • • • • •	BORING NO.	B252 FOIL 204688

	Co	nsulting	YORK, ROCHES	al Engineer	s,		TEST BORING REPORT		BORING NO. B253
	PROJECT: CLIENT: CONTRACT	ROT NIX	H BROS. SMEL ON HARGRAVE	TING CORPO	RATION - P	HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
	TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	hrough	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
j							-ASPHAL	T WITH SUB-B	ASE-
1	_	1	13 13	S1	1.0	1.2	Medium dense red-brown to b	oroup mottle	d sandy SILT trace
١		14					gravel.	LACIAL TILL-	I sainly SILI, trace
		}	6 7	s2*	3.0		Same.	LAGIAL TILL	
	5		6 7	12"/24"	5.0				
			5	s3*	5.0		Same.		
			7 7	24"/24"	7.0			LACIAL TILL-	
ŀ							Bottom of	Boring at 7	.0 ft.
Į							Notes:		
7	10						*1. Sample obtained with 1	1-3/8 in. ID	split spoon.
ŀ							2. Sample S1 submitted for		
ł									
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f	— 15 —								
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I									
-									
-									
-									
ŀ	25 								
ſ			WATER LEVEL	DATA	-		SAMPLE IDENTIFICATION		SUMMARY
1	DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		0 Open End Rod	OVERBURDEN	
			TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	TER T Thin Wall Tube ROCK CORED (I U Undisturbed Sample		
ł		OF CASING OF NOCE			S Split Spoon	SAMPLES:	38		
Į	•							BORING NO.	FOI B254 689

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B254
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D	RATION - P OYLE	HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
		=	CASING	DRIVE CORE DRILLING EQUIPMENT & PROCEDURES SAMPLER BARREL				ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	rough	DATUM: START: 30 October 199 FINISH: 30 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
-		-				-ASPHALT	WITH SUB-B	ASE-
		40 23 30	s1 20"/24"	1.0 3.0	1.4	Very dense red-brown mottle	d sandy SIL	T, trace gravel.
_		17 25 24	s2	3.0		Same.		
5		15 15	10"/24"	5.0		-GL	ACIAL TILL-	
 							Boring at 5	.0 ft.
						Note: 1. Samples S1 and S2 submi	tted for ch	emical analysis.
—10 —								
				•				
 15								
— 20 —								
_25								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED	DEPT	H (FT) TO:		(LIN FT): 5.0		
VAIE	IIME	TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon BORING NO.	(LIN FT): 2S	
								B254 FOIL 204690

Co	nsulting	YORK, ROCHES Geotechnicats and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B255	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI KON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:	
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th asphalt to 1.0 ft.	nrough	DATUM: START: 29 October 1990 FINISH: 29 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
					1.0	-ASPHAL1	WITH SUB-B	ASE-	
		8 20	S1	1.0	1.0	Dense red-brown sandy SILT,	, trace grav	el.	
_		25 19	15"/24"	3.0		-GL	ACIAL TILL-		
		19				Bottom of	Boring at 3	.0 ft.	
<u> </u>				[
		}							
<u>— 10</u> —									
]					
— 15 —									
20 -									
— 25 —							ı		
,		WATER LEVEL				SAMPLE IDENTIFICATION	ON LED ON LED CO.	SUMMARY	
DATE	TIME	ELAPSED -		H (FT) TO:		O Open End Rod T Thin Wall Tube ROCK U Undisturbed Sample S Split Spoon SAMF	OVERBURDEN		
		TIME (HR)	BOTTOM OF CASING	OF HOLE	WATER		ROCK CORED SAMPLES:	(LIN FT): 1S	
							BORING NO.		
							FOI B254 691		

H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B256 Consulting Geotechnical Engineers, TEST BORING REPORT Geologists and Hydrogeologists 70185-42 ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. PROJECT: SHEET NO. NIXON HARGRAVE DEVANS & DOYLE 1 OF 1 CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE DRILLING EQUIPMENT & PROCEDURES CORE CASING SAMPLER BARREL **ELEVATION:** ITFM DATUM: RIG TYPE: Mobile B-57, Truck Mounted TYPE BIT TYPE: START: 30 October 1990 Auger DRILL MUD: FINISH: 30 October 1990 1-3/8 4-1/4 INSIDE DIAMETER (IN) DRILLER: D. Richmond HAMMER WEIGHT ---140 ---OTHER: Advanced augers through (LB) 30 asphalt to 1.0 ft. H&A REP: W. Lanik HAMMER FALL (IN) SAMPLER SAMPLE SAMPLE DEPTH CASING STRATA NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS BLOWS BLOWS PER FT PER 6 IN RECOVERY (FT) (FT) (FT) -ASPHALT WITH SUB-BASE-1.0 1.2 12 S1 Medium dense dark brown to red-brown mottled sandy SILT, trace 11 gravel, trace organics. 8 24"/24" 3.0 8 -FILL-S2 3.0 Same. 14 4.0 12 8 4"/24" 5.0 NR 5.0 No Recovery. Medium dense dark brown silty GRAVEL, trace metal fragments, 5 6 7.0 6 -FILL-7.0-7.8 7.8 8 S4A Medium dense light brown medium to fine SAND, with layer of 8 7.8 coarse medium sand from 8.5 to 9.0 ft. S4B 8 9.0 -LACUSTRINE-7 22"/24" Bottom of Boring at 9.0 ft. - 15 - 20 25 SUMMARY WATER LEVEL DATA SAMPLE IDENTIFICATION 9.0 OVERBURDEN (LIN FT): DEPTH (FT) TO: Open End Rod DATE TIME ELAPSED ROCK CORED (LIN FT): --BOTTOM WATER Thin Wall Tube TIME (HR) BOTTOM T OF CASING OF HOLE 11 Undisturbed Sample 48 Split Spoon SAMPLES: BORING NO. FOIL 264692

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B257 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 CLIENT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 PARRATT-WOLFF, INC. CONTRACTOR: LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ITEM **ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE Auger SS ---BIT TYPE: START: 30 October 1990 FINISH: 30 October 1990 INSIDE DIAMETER (IN) 4-1/4 1-3/8 DRILL MUD: ------HAMMER WEIGHT (LB) 140 OTHER: Advanced augers through DRILLER: D. Richmond 30 --asphalt to 1.0 ft. H&A REP: W. Lanik HAMMER FALL (IN) **DEPTH** CASING SAMPLER SAMPLE SAMPLE **STRATA** DEPTH BLOWS CHANGE VISUAL CLASSIFICATION AND REMARKS **BLOWS** NUMBER & (FT) PER FT PER 6 IN RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-Medium dense gray-brown sandy GRAVEL. 13 1.0 1.3 S1 15 Medium dense red-brown mottled sandy SILT, trace GRAVEL. 21"/24" 10 3.0 -GLACIAL TILL-10 Bottom of Boring at 3.0 ft. 10 20 25 SUMMARY WATER LEVEL DATA SAMPLE IDENTIFICATION DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0 TIME DATE **ELAPSED** Open End Rod TIME (HR) BOTTOM BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): T OF CASING OF HOLE U Undisturbed Sample Split Spoon SAMPLES: 15 S **B257** FOIL 204693 BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B258 Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRILLING EQUIPMENT & PROCEDURES DRIVE CORE CASING SAMPLER BARREL ITEM **ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE Auger SS ---BIT TYPE: START: 30 October 1990 INSIDE DIAMETER (IN) 4-1/4 1-3/8 ---DRILL MUD: ---FINISH: 30 October 1990 HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers through DRILLER: D. Richmond 30 asphalt to 1.0 ft. H&A REP: W. Lanik HAMMER FALL (IN) DEPTH CASING SAMPLER SAMPLE SAMPLE STRATA NUMBER & BLOWS BLOWS DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-Medium dense gray-brown sandy GRAVEL. 17 S1 1.0 1.4 12 Medium dense red-brown mottled sandy SILT, trace gravel. -FILL-11 24"/24" 3.0 2.3 Medium dense dark brown sandy SILT, little organics. 3.4 -BURIED TOPSOIL-3.0 Same. 8"/24" 5.0 Medium dense red brown sandy SILT, trace gravel. 16 5.0 **S3** Same. -GLACIAL TILL-12"/24" 18 7.0 15 12 7.0 **S4** Same. 10 14"/24" 9.0 -GLACIAL TILL-Bottom of Boring at 9.0 ft. 10 - 15 25 SUMMARY WATER LEVEL DATA SAMPLE IDENTIFICATION OVERBURDEN (LIN FT): 9.0 DEPTH (FT) TO: TIME DATE ELAPSED 0 Open End Rod Thin Wall Tube ROCK CORED (LIN FT): TIME (HR) BOTTOM BOTTOM WATER Τ OF CASING OF HOLE U Undisturbed Sample SAMPLES: 4\$ Split Spoon S **B258** FOII 204694 BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B259 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 CLIENT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ITEM **ELEVATION:** DATUM: RIG TYPE: Mobile B-57, Truck Mounted TYPE Auger BIT TYPE: START: 30 October 1990 INSIDE DIAMETER (IN) 4-1/4 1-3/8 ---DRILL MUD: ---FINISH: 30 October 1990 140 OTHER: Advanced augers through DRILLER: D. Richmond HAMMER WEIGHT (LB) ---HAMMER FALL (IN) 30 asphalt to 1.0 ft. H&A REP: W. Lanik SAMPLE CASING SAMPLER SAMPLE STRATA DEPTH BLOWS BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS PER FT PER 6 IN RECOVERY (FT) (FT) (FT) -ASPHALT WITH SUB-BASE-1.0 18 1.0 Very dense red-brown mottled sandy SILT, trace gravel. 29 10"/24" 3.0 -FILL-3.0 38 Medium dense dark brown sandy SILT, little organics, with layer 8 **S**2 3.0 of brown medium to fine sand, trace gravel from 4.5 to 5.0 ft. -LACUSTRINE-24"/24" 5.0 5 Bottom of Boring at 5.0 ft. 15 20 25 SUMMARY WATER LEVEL DATA SAMPLE IDENTIFICATION OVERBURDEN (LIN FT): 5.0 DEPTH (FT) TO: ELAPSED DATE TIME Open End Rod BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): TIME (HR) BOTTOM OF CASING OF HOLE U Undisturbed Sample SAMPLES: 2\$ Split Spoon S BORING NO. FOIL 204695

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B260 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: 1 OF 1 SHEET NO. CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES ITEM CASING SAMPLER BARREL **ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: **TYPE** Auger SS BIT TYPE: START: 30 October 1990 4-1/4 2-3/8 INSIDE DIAMETER (IN) DRILL MUD: FINISH: 30 October 1990 HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers through DRILLER: D. Richmond HAMMER FALL ---**3**0 --asphalt to 1.0 ft. H&A REP: W. Lanik (IN) SAMPLER CASING **DEPTH** SAMPLE SAMPLE STRATA BLOWS DEPTH BLOWS NUMBER & CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-1.0 49 S1 1.0 Dense red-brown sandy SILT, little to trace gravel. -FILL-**3**2 2.0 17"/24" 3.0 16 Medium dense dark brown sandy SILT, little organics. 17 -LACUSTRINE-3.0 Same. 5 18"/24" 5.0 7 -LACUSTRINE-3 S3* 5.0 5.1 Loose brown coarse to fine SAND, trace gravel. 3 8"/24" 7.0 -LACUSTRINE-5 Bottom of Boring at 7.0 ft. Notes: 10 *1. Sample obtained with 1-3/8 in. ID split spoon. 2. Sample S1 submitted for chemical analysis. 15 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 7.0 DATE TIME **ELAPSED** Open End Rod 0 TIME (HR) BOTTOM BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): OF CASING OF HOLE Undisturbed Sample U Split Spoon SAMPLES: 3\$ BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B261 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL **ELEVATION:** ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: ---BIT TYPE: START: 30 October 1990 TYPE Auger SS FINISH: 30 October 1990 1-3/8 INSIDE DIAMETER (IN) 4-1/4 ---DRILL MUD: ---HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers through DRILLER: D. Richmond asphalt to 1.0 ft. 30 ---H&A REP: W. Lanik HAMMER FALL (IN) CASING SAMPLER SAMPLE SAMPLE STRATA DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS BLOWS BLOWS NUMBER & **DEPTH** PER FT PER 6 IN RECOVERY (FT) (FT) (FT) -ASPHALT WITH SUB-BASE-1.0 1.0 Medium dense red-brown sandy SILT, trace gravel. -FILL-11 S1 2.0 14 15 22"/24" 3.0 Medium dense dark brown to brown coarse to fine SAND, little 14 to trace silt, trace gravel, with organics. 8 s2 3.0 6 -LACUSTRINE-5"/24" 5.0 11 Bottom of Boring at 5.0 ft. - 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 5.0 DATE TIME **ELAPSED** 0 Open End Rod TIME (HR) BOTTOM BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): T OF CASING OF HOLE U Undisturbed Sample Split Spoon SAMPLES: 25 BORING NO. **B261** FOIL 204697

Co	onsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B262
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME (ON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:
TYPE INSIDE D HAMMER W	/E I GHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t concrete pad to 0	hrough	DATUM: START: 30 October 199 FINISH: 30 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		5	s1	0.5	0.5	-0	ONCRETE PAD-	
		6 5	12"/24"	2.5	2.1	Medium dense red-brown san	dy SILT, trad	ce gravel.
		6				Medium dense dark brown s	andy SILT, w	ith trace organics.
 5						L	Boring at 2	.5 ft.
- 15 - 20 								
25								
		JATER LEVEL	DATA			SAMPLE IDENTIFICATION SUMMARY		
DATE	TIME	ELAPSED -	T	H (FT) TO:	O Open End Rod			
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	TER T Thin Wall Tube ROCK CORED (LI) U Undisturbed Sample S Split Spoon SAMPLES:	(LIN FT): 1S	
							BORING NO.	FOIL 204698

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B263		
PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II CLIENT: NIXON HARGRAVE DEVANS & DOYLE CONTRACTOR: PARRATT-WOLFF, INC.							FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan			
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	ss 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t concrete pad to 1	:hrough				
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFICATION AND REMARKS				
					1.0	-CONCRETE PAD-				
	8 7		S1	1.0 1.5		Medium dense brown sandy SILT, little to trace gravel. -FILL-				
		10 10 7			3.0	Medium dense dark brown sandy SILT, with trace organicsBURIED SOIL-				
 5		4 3 3	13"/24"	5.0		Very loose brown coarse to fine SANDLACUSTRINE-				
						Bottom of	Boring at 5	.0 ft.		
						Note:				
						*1. Samples S1 and S2 sub	mitted for c	hemical analysis.		
								,		
—10 —										
	ĺ									
_	ĺ							•		
15										
20										
_]	Ì									
- 4										
_25 _										
		ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY		
DATE T	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO			0 Open End Rod	OVERBURDEN	(LIN FT): 5.0		
			BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample	ROCK CORED			
						S Split Spoon	SAMPLES:	2\$		
,							BORING NO.	8263 — FOIL204699		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				rs,		TEST BORING REPORT	BORING NO. B264			
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SME ON HARGRAVE RATT-WOLFF,	DEVANS & C		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:		
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers to asphalt to 0.5 ft	hrough	DATUM: START: 30 October 19 FINISH: 30 October 19 DRILLER: D. Richmond H&A REP: W. Lanik			
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	VISUAL CLASSIFICATION AND REMARKS			
		40		0.5	0.5	-ASPHALT WITH SUB-BASE-				
		12 14 16 30	24"/24"	2.5	1.8	Medium dense red-brown so of black ash from 1.1 to	-FILL-			
						Dense light brown coarse				
5 <u>_</u> _	Bottom of Boring at 2.5 ft.					.5 ft.				
_						Nata				
						Note: *1. Sample S1 submitted fo	or chemical a	analysis.		
						11 05				
- 10 —										
. –										
- 15										
-										
_20 _										
_										
-										
-										
- 25 —										
DATE		ELAPSED TIME (HR)	DEPTH (FT) TO:			SAMPLE IDENTIFICATION	OVERBURDEN	SUMMARY (LIN FT): 2.5		
	TIME		BOTTOM	воттом	WATER	O Open End Rod T Thin Wall Tube	ROCK CORED			
			OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon	SAMPLES:	1s		
							BORING NO.	FOII B264 700		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, Geologists and Hydrogeologists				rs,		TEST BORING REPORT	BORING NO. B265		
PROJECT: CLIENT: CONTRACTO	KIN	TH BROS. SMEI KON HARGRAVE RRATT-WOLFF,	DEVANS & [PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ITEM			CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:	
TYPE INSIDE DI HAMMER WE HAMMER FA	IGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t concrete pad to 0	hrough	DATUM: START: 30 October 19 FINISH: 30 October 19 DRILLER: D. Richmond H&A REP: W. Lanik	
ľ	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	WS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION			IFICATION ANI	D REMARKS		
		17	61	0.5	0.5	-c	ONCRETE PAD-		
		13 16 10	S1 24"/24"	0.5	2.3	Medium dense brown to dark brown mottled sandy SILT, trace gravelFILL-			
2 10 3 4 5 - 6 5 - 5		2	s2*	2.5]	Loose dark brown organic sandy SILT, little organics.			
		12"/24" \$3*	4.5		-LACUSTRINE- Loose brown medium to fine SAND, trace coarse sand.				
		12"/24" 6.5			-LACUSTRINE-				
	8					Bottom of Boring at 6.5 ft.			
_									
						Notes:			
-10 -						*1. Sample obtained with	1-3/8 in. ID.	. split spoon.	
-						2. Sample S1 submitted fo	or chemical a	analysis.	
\dashv									
┪									
=									
-15									
.20									
_									
-25									
	WATER LEVEL DATA					SAMPLE IDENTIFICATION		SUMMARY	
DATE 1	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO:			0 Open End Rod	OVERBURDEN	(LIN FT): 6.5	
				BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample S Split Spoon	ROCK CORED	(LIN FT):	
							SAMPLES:	3\$	
- 1							r —	FOIL 82965 701	

Co	nsulting	YORK, ROCHES Geotechnicats and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B266
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II	· .		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
			2407110	DRIVE	CORE	DRILLING EQUIPMENT & PROCE	DURES	EL EVATION -
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4	SAMPLER SS 2-3/8 140 30	BARREL	RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers thr concrete pad to 0.5	ough	ELEVATION: DATUM: START: 30 October 199 FINISH: 30 October 199 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIF	ICATION AND) REMARKS
		٠	S1	0.5	0.5	- CON	CRETE PAD-	
		8 6 6	18"/24"	0.5 2.5	1.3	Loose gray-brown gravelly	coarse to	fine SAND.
		4	12,2			Loose light brown to dark b little to trace gravel, tra	rown mottle	
5						Bottom of B	oring at 2.	.5 ft.
_						Note:		
						1. Sample S1 submitted for	chemical a	analysis.
.								
- 10								
- -								
_								
<u> </u>								
_ 15 								
. –								
-20		·						
		li						
								
_								
25								
	1	WATER LEVEL				SAMPLE IDENTIFICATION	OVEDBIBOEN	SUMMARY (LIN FT): 2.5
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	BOTTOM	WATER	O Open End Rod T Thin Wall Tube	OVERBURDEN ROCK CORED	,
			OF CASING	OF HOLE		U Undisturbed Sample S Split Spoon SAMPLES:	1s	
							BORING NO.	FOIL 2802454 02

Co	nsultin	YORK, ROCHE g Geotechnic sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B267
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME XON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t asphalt to 0.5 ft	hrough	DATUM: START: 30 October 19 FINISH: 30 October 19 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		2	S1	0.5	0.5	-ASPHA	LT WITH SUB-	BASE-
_		2 3 3	24"/24"	2.5		Loose dark brown sandy SIL light brown fine SAND at 2	T, little or .0 ft. LACUSTRINE-	ganics, grading into
		6 10 12	s2 17"/24"	2.5		Medium dense brown coarse		, trace gravel.
_5 -		8		7.5			Boring at 4	.5 ft.
_10								
								•
		ļ						
-15 —								
· -								
-20								
-								
-								
-								
-25 -								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE		FLADOTO	DEPT	H (FT) TO:		0 0mm End 8md	OVERBURDEN	(LIN FT): 4.5
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod IER T Thin Wall Tube ROCK O U Undisturbed Sample S Split Spoon SAMPLE	ROCK CORED	(LIN FT):
							SAMPLES:	2\$
							BORING NO.	FOIL B2647 703

Co	nsulting	YORK, ROCHE g Geotechnic sts and Hydr	al Enginee	rs,		TEST BORING REPORT		BORING NO. B268
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & I		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE D HAMMER WI HAMMER F.	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers t concrete pad to 0	hrough	DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		13	\$1	0.5	0.2	c	ONCRETE PAD-	
		20 31	20"/24"			Very dense red-brown sandy	SILT, trace	gravel.
- 4		21	s2*	2.5	3.0	Same.	-FILL-	
		3 4 4	23"/24"	4.5		Loose light brown fine SANI little organics from 3.0 to	D, with layer o 3.5 ft. LACUSTRINE-	r of dark brown silt,
_, _						Bottom of B	oring at 4.5	ft.
		ľ						
						Notes:		
						*1. Sample obtained with		
—10 —						2. Sample S1 submitted fo	or chemical a	analysis.
			i					
-15 —			1					
-20 								
7								
-25 -								
		ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
	Ţ		DEPTH (FT) TO:		MPLE IDENTIFICATION SUMMAR OVERBURDEN (LIN FT)			
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	воттом	O Open End Rod WATER T Thin Wall Tube ROCK CORED (LIN FT			
			OF CASING	OF HOLE		U Undisturbed Sample	SAMPLES:	2\$
						BOR		FOIL g₂₄ 704

Cor	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B269	
PROJECT: CLIENT: CONTRACTO	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II	-		FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
11	rem		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:	
TYPE INSIDE DI HAMMER WE HAMMER FA	IGHT	(IN) (LB)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th concrete pad to 0.	rough	DATUM: START: 30 October 199 FINISH: 30 October 199 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS	
					0.5	-00	NCRETE PAD-		
		27 18 11	s1 20"/24"	2.5		Medium dense brown sandy SI	LT, trace g	ravel.	
		2 2 2	NR	2,5	2.4	No Recovery.			
5		7 7 6	\$3* 24"/24"	4.5		light brown coarse to fine	LT, little organics, grading into sandy SILT, trace gravel at 5.2 ft. LACUSTRINE-		
		8				Bottom of			
- 4						Notes:			
- 4						*1. Sample obtained with 1	-3/8 in. I.I	D. split spoon.	
_10 -						2. Sample S1 submitted fo	r chemical	analysis.	
 - 15 									
_20 									
 -25 -									
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
24.75	7115	ELADOCO	DEPT	H (FT) TO:		0. Open End Pod	OVERBURDEN	(LIN FT): 6.5	
DATE TIM	TIME			WATER	U Undisturbed Sample	ROCK CORED	(LIN FT): 3S		
						з эрсте эрост	BORING NO.		

	H&/	onsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	`s,		TEST BORING REPORT		BORING NO. B270			
	PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan			
	1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:			
	TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th concrete pad to 1.	ırough	DATUM: START: 30 October 1990 FINISH: 30 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik				
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AND	D REMARKS			
						1.0	-α	NCRETE PAD-				
	_ <u>-</u>		3 2	s1	1.0	1.0	Loose dark brown SILT, litt	le organics. ACUSTRINE-	•			
			3 3	19"/24"	3.0	2.3	Loose light brown fine SAND					
		ļ	7	s2	3.0		Same, except medium dense.					
	5		7 6	24"/24"	5.0		-L	ACUSTRINE-				
							Bottom of	Bottom of Boring at 5.0 ft.				
			ĺ									
				}								
	10											
									•			
	— 15 —											
]								
	20						·					
	_											
	 25											
			WATER LEVEL	DATA			SAMPLE IDENTIFICATION SUMMARY		SUMMARY			
			DEPTH (FT) TO:		OVERBURDEN (L							
	DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod	ROCK CORED	(LIN FT):			
ł				OF CASING	OF HULE	-		SAMPLES:	2s			
	•						BORING		FOIL204706			

Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	rs,		TEST BORING REPORT		BORING NO. B271	
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:	
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers the concrete pad to 0	hrough	DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
		4	s1	0.5	0.5	-00	ONCRETE PAD-		
		7 5 7 8 6 6	14"/24" \$2	2.5	3.0	Medium dense dark brown grawith occasional cinders. Same, except brown and mo	-FILL-	little to trace sand,	
 5		5 4	18"/24"	4.5		Medium dense dark brown s		little orgaincs, trace	
]	-LACUSTRINE-		
10									
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED	DEPT	H (FT) TO:		O Open End Rod T Thin Wall Tube U Undisturbed Sample S Split Spoon OVERBURDEN (LI ROCK CORED (LI SAMPLES:	(LIN FT): 4.5		
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER			(LIN FT): 2S	
. 1						BORING		FOIL 2647 07	

INSIDE DIAMETER (1H) A-1/A A-2-7/B MAMMER REIDN CASING CONTRER AND AND AND AND AND AND AND AND AND AND	Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	·s,		TEST BORING REPORT		BORING NO. B272		
TITPM TYPE INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGER INSIDE DIAMETER (IN) AUGURE AUGURE IN BLOWS	CLIENT:	NIX	ON HARGRAVE	DEVANS & D		PHASE II			SHEET NO. 1 OF 1		
TYPE August Start I	TEM		CASING	1							
GET BLOWS BLOWS RECOVERY (FT) CHANGE (FT)	HAMMER WEIGHT (LB)		4-1/4	2-3/8 140		BIT TYPE: DRILL MUD: OTHER: Advanced augers to	hrough	START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond			
A 7 11 15	DEPTH (FT)	BLOWS	BLOWS	NUMBER &	DEPTH	CHANGE	VISUAL CLASS	IFICATION AN	D REMARKS		
Hedium dense brown gravelly SILT, little sand, with wood fragments.						1.0	-ASPHAL	T WITH SUB-B	ASE-		
Hedium dense dark brown sandy SILT, Little organics. Bottom of Boring at 3.0 ft. Note: 1. Sample S1 submitted for chemical analysis. 1. Sample S1 submitted for chemical analysis.			4 S1 1.0 Medium dense brown gravelly SILT, li fragments.						le sand, with wood		
Note:			15								
1. Sample S1 submitted for chemical analysis. ——————————————————————————————————	—5 —						Bottom of	Boring at 3	.0 ft.		
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0	— 10 -										
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0									•		
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0	- 15 - 										
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0	_20 <i>_</i> _										
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0											
DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0	- 25 -										
		, 	ATER LEVEL	DATA							
	DATE	TIME	ELAPSED				0 Open End Rod				
TIME (HR) BOTTOM BOTTOM WATER T Thin Wall Tube ROCK CORED (LIN FT): OF CASING OF HOLE U Undisturbed Sample S Split Spoon SAMPLES: 1S			TIME (HR)			WATER	U Undisturbed Sample				
BORING NO. FOIL \$27708							,	<u> </u>	FOIL \$64708		

ĺ			YORK, ROCHES								
	Co	nsulting Geologis ————	Geotechnica ts and Hydro	geologists	s, 		TEST BORING REPORT		BORING NO. B273		
_	PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
	-	TEM	-	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION: 417.00		
	TYPE INSIDE D	DE DIAMETER (IN) 4-1/4 1-3/8 ER WEIGHT (LB) 140					RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: NGVD START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
	DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS		
Í						4.0	-ω	NCRETE PAD-			
			7	S1*	1.0	1.0	Medium dense brown mottled	silty coars	e to fine SAND, trace		
	8 12 21"/24" 3.0 6 8 82 3.0						gravel. Loose brown to dark brown m gravel, trace organics.	-FILL- pottled fine	sandy SILT, trace		
	 5		4 4 5	15"/24"	5.0		Same.	-FILL-			
	2 83 5.0						Loose dark brown sandy SILT	, little or	ganics.		
	<u>-</u>		3	17"/24"	7.0	Same, except wetBURI					
			5	\$4	7.0	7.7	Medium dense red-brown sandy SILT, trace gravel.				
			8 8 10	21"/24" S5	9.0		-GLACIAL TILL-				
_	—10 —		12 13	10"/24"	11.0		Same, except with occasional layer of coarse to medium sand.				
			20 18	S6	11.0		Same, except dense.				
			16 18	24"/24"	13.0		-GL	ACIAL TILL-			
			21				Bottom of	Boring at 1	3.5 ft.		
ı											
	— 15 — — — — —						Note: 1. Sample S1 submitted for chemical analysis. 2. * Sample obtained with 2-3/8 in. I.D. split spoon. 3. Observation well installed in completed boring. See Groundwater Observation Well Report.				
	 20						·				
	 25										
İ		WATER LEVEL DATA		SAMPLE IDENTIFICATION		SUMMARY					
•		DEPTH (FT) TO:			OVERBURDEN (LIN F)		(LIN FT): 13.5				
		WATER	0 Open End Rod T Thin Wall Tube U Undisturbed Sample		(LIN FT):						
	See Gro	undwater	Monitoring	Report.			S Split Spoon	SAMPLES: BORING NO.	6S FOIL 204709		
	,				L				T OIL204709		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B274 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE DRILLING EQUIPMENT & PROCEDURES ITEM CASING SAMPLER BARREL **ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE SS BIT TYPE: Auger START: **31 October 1990** 2-3/8 FINISH: 31 October 1990 INSIDE DIAMETER (IN) 4-1/4 ---DRILL MUD: ---HAMMER WEIGHT 140 OTHER: Advanced augers through (LB) DRILLER: D. Richmond HAMMER FALL 30 (IN) H&A REP: W. Lanik concrete pad to 1.0 ft. SAMPLER **DEPTH** CASING SAMPLE SAMPLE STRATA NUMBER & BLOWS BLOWS DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS PER 6 IN RECOVERY (FT) PER FT (FT) (FT) -CONCRETE PAD-1.0 Medium dense brown gravelly coarse to fine SAND, with wood 12 **S1** 1.0 10 1.8 -FILLfragments. 18"/24" 3.0 Loose dark brown sandy SILT, little organics. -BURIED TOPSOIL-Bottom of Boring at 3.0 ft. Note: Sample S1 submitted for chemical analysis. - 15 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 3.0 DATE TIME **ELAPSED** 0 Open End Rod TIME (HR) ROCK CORED (LIN FT): BOTTOM BOTTOM WATER Thin Wall Tube OF CASING OF HOLE Undisturbed Sample U SAMPLES: S Split Spoon 1s BORING NO. **B274** <u>FOIL 204710</u>

	onsultin	YORK, ROCHE G Geotechnic sts and Hydr	al Engineer	rs,	_	TEST BORING REPORT		BORING NO. B275
PROJECT: CLIENT: CONTRACT	NI	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO	CEDURES	ELEVATION:
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tr BIT TYPE: DRILL MUD: OTHER: Advanced augers to concrete pad to 1	hrough	DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	CASING BLOWS PER FT	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
					1.0	-0	ONCRETE PAD-	
		12 5	S1	1.0	1.0	Loose gray-brown gravelly	coarse to fi	ne SAND, wet.
		4 4	3"/24"	3.0	2.5	Medium dense dark brown sam	ndy SILT, li	ttle organics.
		6 2	\$2	3.0		Same, except loose.		
5	ļ	7 10	24"/24"	5.0			Boring at 5	•
				-		Note: 1. Composite of sample S1 submitted for chemical	and top 0.5 analysis.	ft. of sample S2
- -								
20								
- 25 —								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
- Indiana series	DEPTH (FT) TO:			3.0	OVERBURDEN			
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube	n End Rod n Wall Tube ROCK CORED (LIN FT):	
			OF CASING	OF HULE		U Undisturbed Sample	SAMPLES:	2\$
					BORING NO. B2			

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B276		
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEU ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
I	DRIVE CORE ITEM CASING SAMPLER BARREL					DRILLING EQUIPMENT & PROC		ELEVATION:		
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers th concrete pad to 1.	nrough	DATUM: START: 31 October 1990 FINISH: 31 October 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	IFICATION AN	D REMARKS		
					4.0	-α	ONCRETE PAD-			
		4	S1	1.0	1.0	Loose gray-brown sandy GRAN	ÆL, wet.			
		3 2	3"/24"	3.0		Same.	-FILL-			
		4	\$2	3.0	3.3	Medium dense dark brown sar		ttle organics.		
5		9 7 11	24"/24"	5.0	4.5	-BL	JRIED TOPSOI	L		
						Medium dense light brown coarse to medium SAND, tra -LACUSTRINE-				
						Bottom of	Boring at 5	.0 ft.		
						Note:				
— 10 —						1. Composite of sample S1	and top 0.5	ft. of sample S2		
						submitted for chemical	analysis.			
]							
15										
- 4										
							•			
— 20 —										
			}							
- 1										
	j									
 25										
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION SUMMARY	SUMMARY			
,				H (FT) TO:						
DATE	TIME	ELAPSED TIME (HR)	BOTTOM	BOTTOM	WATER	0 Open End Rod	(LIN FT):			
			OF CASING	OF HOLE	_		SAMPLES:	2\$		
,							B276 -FOII 204712			

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B277	
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
ī	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:	
TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4	ss 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 1 November 1990 FINISH: 1 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS	
_		5 6	S1 21"/24"	0.0	0.5	Medium dense dark brown si gravel, trace organics.	lty coarse -FILL-	to fine SAND, trace	
		8 8 12	\$2	2.0		Medium dense red-brown to b gravel, trace organics. Same, except no organics.	rown mottle	d sandy SILT, trace	
		8 11	S3	4.0	4.8	SameGl	ACIAL TILL-		
5		8 7	24"/24"	6.0	4.0	gravel, layered.	silty coarse to fine SAND, trace		
		12 13 12	\$4	6.0 8.0		Medium dense light brown in layer of coarse to medium s			
		9 11 4 3	24"/24" \$5	8.0		Same, except loose, with la	layer of brown sandy SILT, trace ftLACUSTRINE- of Boring at 10.0 ft.		
 10		2 4	12"/24"	10.0					
10		•				Bottom of			
						Note: Observation well ins See Groudwater Obser			
 15									
								,	
20									
25 _					_				
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY	
DATE	TIME	ELAPSED -	DEPT	H (FT) TO:		0 Open End Rod	OVERBURDEN	(LIN FT): 10.0	
		TIME (HR)	BOTTOM OF CASING	OF HOLE	WATER	ATER T Thin Wall Tube ROCK CORED (L) Undisturbed Sample S Split Spoon SAMPLES:	(LIN FT): 5s		
		See Grour	ndwater Mon	itoring Re	port		BORING NO.	8277 FOIL 204713	

	Consultin	YORK, ROCHES g Geotechnica sts and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B278	
PROJE CLIEN CONTR	T: NI	TH BROS. SMEL XON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan	
	ITEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PRO		ELEVATION:	
HAMME	TYPE INSIDE DIAMETER (IN) HAMMER WEIGHT (LB) HAMMER FALL (IN)		Auger 4-1/4	SS 2-3/8 140 30		RIG TYPE: Mobile B-57, Tru BIT TYPE: DRILL MUD: OTHER: Advanced augers t		DATUM: START: 1 November 1990 FINISH: 1 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik	
DEPTH (FT)	BLOWS	BLOWS	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS	
		5 12 13	s1 24"/24"	0.0 2.0		Medium dense dark brown graith wood fragments, cinde ash.			
]	11 10	S2	2.0	3.0	Same.			
-	-5					Medium dense light brown me sand, with occasional layer	edium to find r of silt.	e SAND, trace coarse	
5						- Same.	LACUSTRINE-		
						Loose brown coarse SAND, to			
F		5 4	18"/24"	8.0		layer of medium to fine sand from 7.5 to 8.0 ft. Medium dense light brown coarse to medium SAND.			
-	4	5 6	S5* 15"/24"	10.0					
10	-	5							
						-1	LACUSTRINE-		
-	-					Bottom of	Boring at 12	2.0 ft.	
— 15 · —						Notes: 1. * Sample obtained with 2. Samples S1, S2, and S3 analysis. 3. Observation well instal See Groundwater Observa	submitted fo led in compl	or chemical eted boring.	
- - -20 .									
-	-								
_	_								
25									
	WATER LEVEL DATA				SAMPLE IDENTIFICATION SUMMARY				
DATE	TIME (HR) BOTTOM OF HOLE	APSED			O Open End Rod T Thin Wall Tube OVERBURDEN (LIN FT): 12.0 ROCK CORED (LIN FT):				
			U Undisturbed Sample S Split Spoon SAMP		5s				
,		See Groundwater Monitoring Report					BORING NO.	FOI B27\$ 714	

Co	nsulting	YORK, ROCHES Geotechnica ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B279
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEL ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:
TYPE	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	ss 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 1 November 1990 FINISH: 1 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
EPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
		8 7	\$1 13"/24"	0.0		Medium dense dark brown to gravel, with cinder particl		led sandy SILT, trace
-		2	s2	2.0	2.0	Loose dark brown ORGANIC SI	LT, wet.	
. –		2 2	8"/24"	4.0		-L	ACUSTRINE-	
 5		1 Woh Woh	S3	4.0		Same, except very loose wit layers.	h frequent	coarse to medium sandy
		2	21"/24"	6.0		SameL	ACUSTRINE-	
. –		WOH WOH 2	\$4 24"/24"	6.0 8.0	6.5	Loose light brown coarse to and layers of silt.	medium san	d, with frequent seams
		6 3 -	S5	8.0		Loose light brown medium SA of fine sand,	ND, with fr	equent seams and layers
- 10		5 7	15"/24"	10.0			Boring at 1	0.0.45
						Note: Observation well ins See Groundwater Obse	talled in c ervation Wel	ompleted boring.
_ 25 —								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
n	T1115	EL ADOSO	DEPT	DEPTH (FT) TO:		O Open End Rod	OVERBURDEN	(LIN FT): 10.0
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	U Undisturbed Sample	ROCK CORED) (LIN FT): 5S
		See Grounk	water Moni	toring Rec	ort		J CE3.	

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B280 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 CLIENT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan CORE DRIVE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ITEM **ELEVATION:** RIG TYPE: Mobile B-57, Truck Mounted DATUM: TYPE Auger SS BIT TYPE: ---START: 1 November 1990 INSIDE DIAMETER (IN) 4-1/4 1-3/8 DRILL MUD: ------FINISH: 1 November 1990 HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers to 10.0 ft. DRILLER: D. Richmond HAMMER FALL 30 (IN) W. Lanik H&A REP: DEPTH CASING SAMPLER SAMPLE SAMPLE STRATA BLOWS BLOUS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) Very loose brown gravelly SILT, little sand, with wood 1 0.0 1.0 fragments. -FILL-3"/24" 1 2.0 Very loose dark brown LOAM. 3 2.0 2.2 S2 -BURIED TOPSOIL-5 5 20"/24" 4.0 Loose light brown mottled fine sandy SILT. -LACUSTRINE-5 **S**3 4.0 Loose light brown SILT, with occasional layers of fine sand. 5 20"/24" 6.0 5 **S4** 6.0 Medium dense light brown fine SAND, with frequent layers of 8 silt from 6.0 to 7.0 ft. 9 24"/24" 8.0 8.0 6 **S**5 Medium dense interbedded light brown medium and fine SAND. 8 6 24"/24" 10.0 -LACUSTRINE-7 Bottom of Boring at 10.0 ft. Note: Observation well installed in completed boring. See Groundwater Observation Well Report. 20 .25 . WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 10.0 TIME **ELAPSED** DATE Open End Rod TIME (HR) BOTTOM BOTTOM WATER Т Thin Wall Tube ROCK CORED (LIN FT): OF CASING OF HOLE U Undisturbed Sample Split Spoon SAMPLES: 5s S See Groundwater Monitoring Report FOIL204716 BORING NO.

Co	nsulting	YORK, ROCHES Geotechnicates and Hydro	al Engineer	rs,		TEST BORING REPORT		BORING NO.	B281		
PROJECT: CLIENT: CONTRACT	(IM	TH BROS. SME KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. SHEET NO. LOCATION:	70185-42 1 OF 1 See Plan		
ı	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCED	-	ELEVATION:			
TYPE INSIDE D HAMMER W HAMMER F		(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Truck BIT TYPE: DRILL MUD: OTHER: Advanced augers to 1		FINISH: 5	November 1990 November 1990 D. Richmond W. Lanik		
OEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSIFI	CATION AND) REMARKS			
		1 1	S1	0.0		Very loose brown to dark brow	in sandy SI	LT, trace	gravel.		
		2 2	10"/24"	2.0		Same	FILL-				
· –		5 8 9	\$2 10"/24"	2.0 4.0	2.2	Medium dense red-brown sandy		ce gravel.			
5		8 14	S3	4.0]	Same.					
		16 16	18"/24"	6.0							
		27 50/0.3	s4 9"/9"	6.0-6.8		Same, except very dense.					
	,	50/0.4	cs en Æn	8.0-8.4		Sama					
		30/0.4	-S5 5"/5"	0.0-8.4		Same.	IAL TILL-				
10						Bottom of Bo		0.0 ft.			
· -							Note: Observation well installed in completed boring. See Groundwater Observation Well Report.				
_ 15											
-											
		,									
-20									İ		
	ŀ										
4					ĺ						
4											
-											
- 25											
		ATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY			
DATE	TIME	ELAPSED -	DEPTI	H (FT) TO:		0 Open End Rod	VERBURDEN	(LIN FT):	10.0		
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube RO U Undisturbed Sample	OCK CORED	(LIN FT):			
		See Groundwa	ater Level	Monitoring	Report	· · · · —	AMPLES:		58		
						BC	ORING NO.	F	B281		

H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B282 Consulting Geotechnical Engineers, TEST BORING REPORT Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 PROJECT: SHEET NO. 1 OF 1 NIXON HARGRAVE DEVANS & DOYLE CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRILLING EQUIPMENT & PROCEDURES DRIVE CORE CASING SAMPLER BARREL **ELEVATION:** ITEM DATUM: RIG TYPE: ---START: 5 November 1990 BIT TYPE: SS TYPE FINISH: 5 November 1990 ---DRILL MUD: ------1-3/8 INSIDE DIAMETER (IN) DRILLER: D. Richmond Advanced split spoon with NA OTHER: HAMMER WEIGHT (LB) H&A REP: W. Lanik sledge hammer HAMMER FALL NA (IN) SAMPLER SAMPLE SAMPLE STRATA CASING DEPTH VISUAL CLASSIFICATION AND REMARKS BLOWS NUMBER & DEPTH CHANGE BLOWS PER FT PER 6 IN RECOVERY (FT) (FT) (FT) Dark brown to brown sandy SILT, little to trace gravel, trace 0.0 organics. -FILL-24"/24" 2.0 Bottom of Boring at 2.0 ft. Note: Sample S1 submitted for chemical analysis. 15 20 25 SUMMARY SAMPLE IDENTIFICATION WATER LEVEL DATA OVERBURDEN (LIN FT): 2.0 DEPTH (FT) TO: TIME ELAPSED Open End Rod DATE Thin Wall Tube ROCK CORED (LIN FT): WATER TIME (HR) BOTTOM BOTTOM T Undisturbed Sample OF CASING OF HOLE U 18 s Split Spoon SAMPLES: B282 BORING NO. FOIL204718

H&A OF NEW YORK, ROCHESTER, NEW YORK BORING NO. B283 Consulting Geotechnical Engineers, TEST BORING REPORT Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 PROJECT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. CLIENT: 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan CORE DRIVE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ELEVATION: ITEM RIG TYPE: ---DATUM: TYPE ---BIT TYPE: ---START: 5 November 1990 FINISH: 5 November 1990 1-3/8 INSIDE DIAMETER (IN) DRILL MUD: ------NA ---OTHER: Advanced split spoon with DRILLER: D. Richmond HAMMER WEIGHT (LB) H&A REP: W. Lanik NA sledge hammer HAMMER FALL (IN) DEPTH SAMPLER SAMPLE SAMPLE STRATA CASING VISUAL CLASSIFICATION AND REMARKS DEPTH CHANGE BLOWS BLOWS NUMBER & PER FT PER 6 IN RECOVERY (FT) (FT) (FT) Dark brown to brown sandy SILT, little to trace gravel, trace 0.0 organics. 24"/24" 2.0 -FILL-Bottom of Boring at 2.0 ft. Note: Sample S1 submitted for chemical analysis. 15 - 20 25 SAMPLE IDENTIFICATION SUMMARY WATER LEVEL DATA OVERBURDEN (LIN FT): 2.0 DEPTH (FT) TO: DATE TIME ELAPSED Open End Rod ROCK CORED (LIN FT): TIME (HR) BOTTOM BOTTOM WATER Т Thin Wall Tube OF CASING OF HOLE U Undisturbed Sample SAMPLES: 18 S Split Spoon BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B284 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 JLIENT: PARRATT-WOLFF, INC. CONTRACTOR: LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES ITEM CASING SAMPLER BARREL ELEVATION: DATUM: RIG TYPE: ---TYPE SS ---BIT TYPE: ---START: 5 November 1990 FINISH: 5 November 1990 1-3/8 DRILL MUD: ---INSIDE DIAMETER (IN) ---HAMMER WEIGHT (LB) NA OTHER: Advanced split spoon with DRILLER: D. Richmond NA --sledge hammer H&A REP: W. Lanik HAMMER FALL (IN) DEPTH CASING SAMPLER SAMPLE SAMPLE **STRATA** CHANGE BLOWS BLOWS NUMBER & **DEPTH** VISUAL CLASSIFICATION AND REMARKS PER 6 IN (FT) (FT) PER FT RECOVERY (FT) S1 0.0 Dark brown to brown sandy SILT, little to trace gravel, trace organics. 24"/24" 2.0 -FILL-Bottom of Boring at 2.0 ft. Note: Sample S1 submitted for chemical analysis. WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY OVERBURDEN (LIN FT): 2.0 DEPTH (FT) TO: DATE TIME ELAPSED Open End Rod 0 TIME (HR) BOTTOM WATER Thin Wall Tube ROCK CORED (LIN FT): BOTTOM T OF CASING OF HOLE Undisturbed Sample U SAMPLES: Split Spoon 18 **B284** <u>FOIL 20472</u>0 BORING NO.

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B285 Geologists and Hydrogeologists PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 CLIENT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRILLING EQUIPMENT & PROCEDURES DRIVE CASING SAMPLER BARREL **ELEVATION:** ITEM RIG TYPE: ---DATUM: START: 5 November 1990 TYPE SS BIT TYPE: ------FINISH: 5 November 1990 INSIDE DIAMETER (IN) ---1-3/8 DRILL MUD: ------DRILLER: D. Richmond HAMMER WEIGHT (LB) NA OTHER: Advanced split spoon with H&A REP: W. Lanik HAMMER FALL (IN) NA sledge hammer CASING SAMPLER SAMPLE SAMPLE **STRATA** DEPTH BLOWS BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) 0.0 Dark brown to brown sandy SILT, little to trace gravel, trace organics. 8"/24" 2.0 -FILL-**S2** 2.0 Same, except trace gravel. 10"/24" -FILL-4.0 Bottom of Boring at 4.2 ft. Note: Composite of samples \$1 and \$2 submitted for chemical analysis. 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY 2.0 OVERBURDEN (LIN FT): DEPTH (FT) TO: DATE TIME **ELAPSED** 0 Open End Rod ROCK CORED (LIN FT): TIME (HR) WATER Thin Wall Tube BOTTOM BOTTOM T OF CASING OF HOLE U Undisturbed Sample S SAMPLES: 25 Split Spoon BORING NO. B285

	onsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B286		
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEL KON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
,	TEM		CASING	DR IVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION:		
TYPE INSIDE D HAMMER V HAMMER F		(IN) (LB) (IN)	Auger 4-1/4 	ss 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 5 November 1990 FINISH: 5 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	IFICATION AN	D REMARKS		
		2 1 _	S1	0.0	0.5	Very loose dark brown same	dy GRAVEL, t	race organics.		
 		3 5 3 4 8	15"/24" \$2 24"/24"	2.0		Loose red-brown to brown mo -GL Same, except medium dense, sand.	ACIAL TILL-			
5		17 27 50/0.3	\$3 12"/15"	4.0 5.3		Same, except very dense.				
		50/0.3	S4 4"/4"	6.0-6.3		SameGL	ACIAL TILL-			
 		26 50/0.4	s5 11/11"	8.0-8.9		Same.	ACIAL TILL-			
—10 —						-GLACIAL TILL- Bottom of Boring at 10.0 ft.				
 						Note: Observation well ins See Groundwater Obse	stalled in co	ompleted boring.		
-15 										
								,		
_20 _										
-25 -										
		WATER LEVEL				SAMPLE IDENTIFICATION		SUMMARY		
DATE	TIME	ELAPSED -		DEPTH (FT) TO:		O Open End Rod	OVERBURDEN			
	_		BOTTOM OF CASING	OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample S Split Spoon	ROCK CORED SAMPLES:	(LIN FT): 5s		
		See Groundw	ater Level	Monitorin	g Report		BORING NO.	FOIL 204722		

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B287 Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO. 70185-42 PROJECT: NIXON HARGRAVE DEVANS & DOYLE SHEET NO. 1 OF 1 CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES SAMPLER BARREL **ELEVATION:** CASING ITEM RIG TYPE: Mobile B-57, Truck Mounted DATUM: BIT TYPE: ---TYPE SS START: 2 November 1990 Auger ---FINISH: 2 November 1990 INSIDE DIAMETER (IN) 4-1/4 1-3/8 DRILL MUD: ---HAMMER WEIGHT 140 OTHER: Advanced augers to 10.0 ft. DRILLER: D. Richmond (LB) H&A REP: W. Lanik HAMMER FALL (IN) 30 CASING SAMPLER SAMPLE SAMPLE **STRATA** DEPTH BLOWS BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) -ASPHALT WITH SUB-BASE-12 1.0 Medium dense gray-brown GRAVEL. 1.5 17"/24" 11 3.0 Medium dense light brown coarse to fine SAND, trace silt. 12 s2 3.0 13 12 Same. 15"/24" 5.0 -LACUSTRINE-5.0 5.0 Medium dense red-brown sandy SILT, trace gravel, with layer of **S**3 7 coarse to medium sand from 5.3 to 5.5 ft. 18"/24" 7.0 -GLACIAL TILL-Bottom of Boring at 10.0 ft. Notes: 1. 40 ppm volatile organic compounds detected inside casing during drilling. Observation well installed in completed boring. See Groundwater Observation Well Report. 15 20 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY OVERBURDEN (LIN FT): 10.0 DEPTH (FT) TO: DATE TIME ELAPSED Open End Rod WATER ROCK CORED (LIN FT): BOTTOM Thin Wall Tube TIME (HR) BOTTOM T OF CASING OF HOLE Undisturbed Sample SAMPLES: 38 Split Spoon See Groundwater Monitoring Report BORING NO. **B287**

	nsulting	YORK, ROCHES Geotechnicates and Hydro	al Engineer	·s,		TEST BORING REPORT		BORING NO. B288
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEI CON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
1	TEM		CASING	DRIVE SAMPLER	CORE	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
TYPE	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4	ss 1-3/8 140 30		RIG TYPE: Mobile 8-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 2 November 1990 FINISH: 2 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	IFICATION AN	D REMARKS
						-ASPHALT	r WITH SUB-B	ASE-
		15	s1 n 20"/ <i>2</i> 4"	1.0	2.0	Dense gray-brown sandy GRAV	/EL, slight	black staining at 0.8 ft.
		16 17	L	2.0	2.0	Dense light brown sandy SIL	т.	
		9 10	S1-B NR	3.0		No Recovery.		
		10 10	NK	5.0		-LAC	CUSTRINE-	
, 		''				Bottom of	Boring at 5	.0 ft.
						Note: 1. 3 ppm volatile organic sample S1. 2. Borehole left open for water levels.	•	
 25								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
				H (FT) TO:		333333333333333333333333333333333333333	OVERBURDEN	
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	
11 /2 /00	1130	1.0	OF CASING	5.0	4.2	U Undisturbed Sample S Split Spoon	SAMPLES:	2\$
11/2/90 11/2/90	1230	2.0		5.0	4.2		BORING NO.	B288 FOIL 204724

Co	nsulting	YORK, ROCHE Geotechnic sts and Hydr	al Engineer	s,		TEST BORING REPORT		BORING NO. B289
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SME CON HARGRAVE RRATT-WOLFF,	DEVANS & D		PHASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
I	TEM		CASING	DR IVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	EDURES	ELEVATION:
TYPE INSIDE D HAMMER W HAMMER F	EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 2 November 1990 FINISH: 2 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	D REMARKS
 						-ASPHALT Medium dense gray-brown coa	WITH SUB-B	
		5 7 7	S1 14"/24"	1.0	1.3	Medium dense dark brown med black stained cinders.	lium sandy G	RAVEL, trace silt, with
		23		3.0		Same.	-FILL-	
5		22 14 11	12"/24"	5.0	3.5	Dense light brown coarse to	medium SAN	D, trace gravel.
_						Bottom of	Boring at 5	.0 ft.
						Note: 1. No volatile organic complevels within explorati 2. Borehole left open for water levels.	on.	
 20								
25								
		WATER LEVEL	DATA			SAMPLE IDENTIFICATION		SUMMARY
DATE	TIME	ELAPSED	DEPT	H (FT) TO:	-	0 Open End Rod	OVERBURDEN	
		TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	T Thin Wall Tube U Undisturbed Sample S Split Spoon	ROCK CORED SAMPLES:	(LIN FT): 2s
11/2/90	1130	2.0		5.0	1.4	a apricapout	BORING NO.	FOIL20472 <mark>\$289</mark>

Co	nsulting	YORK, ROCHES Geotechnica sts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B290
PROJECT: CLIENT: CONTRACT	NIX	TH BROS. SMEL KON HARGRAVE RRATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan
	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC	CEDURES	ELEVATION:
TYPE	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	SS 1-3/8 140 30		RIG TYPE: Mobile B-57, Truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: START: 5 November 1990 FINISH: 6 November 1990 DRILLER: D. Richmond H&A REP: W. Lanik
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASS	IFICATION AN	D REMARKS
		7 7	S1	0.0		Medium dense brown sandy GR	RAVEL, littl	e to trace silt.
		5 4	24"/24"	2.0		Same.	-FILL-	
		4 3	s2	2.0	2.3	Loose brown to dark brown (ORGANIC SILT	
		3 3	14"/24"	4.0	4.0		LACUSTRINE-	
		11 27	S3	4.0		Very dense red-brown sandy	SILT, trace	gravel.
L -		41	15"/24"	6.0		-GI	ACIAL TILL-	
		14	S4	6.0		Medium dense red-brown coar gravel.	rse to fine	SAND, trace silt, trace
L -		10 7	18"/24"	8.0				
		5 7	\$ 5	8.0		Same, except some silt.		
10		7 9	24"/24"	10.0		-GL	ACIAL TILL-	
<u> </u>	•					Bottom of	Boring at 1	0.5 ft.
						Note: Observation well ins See Groundwater Obse		
<u> </u>								
15								
<u> </u>								
-								
-								
20								
-								
								İ
25						2000 2 2000 2000		CUMMARY
		WATER LEVEL		(FT) TO:		SAMPLE IDENTIFICATION	OVERBURDEN	SUMMARY (LIN FT): 10.5
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod T Thin Wall Tube U Undisturbed Sample	ROCK CORED	
11/6/90	0730	14	4.0	4.0	2.7	S Split Spoon	SAMPLES:	5s
,		See Groundw					BORING NO.	FOIL204726

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B291 Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II PROJECT: 70185-42 FILE NO. CLIENT: NIXON, HARGRAVE, DEVANS & DOYLE SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES CASING SAMPLER BARREL ELEVATION: 406.06 ITEM RIG TYPE: ATV, track-mounted DATUM: NGVD TYPE BIT TYPE: ---Auger START: 22 January 1991 1-3/8 INSIDE DIAMETER (IN) 4-1/4 ---DRILL MUD: ---FINISH: 22 January 1991 DRILLER: B. Waters H&A REP: M. Corrigan HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers to 13.0 ft. HAMMER FALL 30 (IN) DEPTH CASING SAMPLER SAMPLE SAMPLE STRATA BLOWS BLOWS NUMBER & DEPTH CHANGE VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) Very loose brown silty fine SAND, little clay, trace organics, 0.0 1 moist. 10"/24" 2.0 1 -LACUSTRINE-4 5.0 Medium dense brown silty fine SAND, wet. 5 8 20"/24" 7.0 -LACUSTRINE-9 5 Medium dense brown fine SAND, trace medium sand, wet. 10.0 **S3** 9 7 19"/24" 12.0 -LACUSTRINE-7 Bottom of Boring at 13.0 ft. Notes: 1. Installed monitoring well in completed borehole. 2. See Overburden Observation Well Report. 20 . 25 WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 13.0 ft. DATE TIME **ELAPSED** Open End Rod TIME (HR) BOTTOM **BOT TOM** WATER Т Thin Wall Tube ROCK CORED (LIN FT): ---OF CASING OF HOLE U Undisturbed Sample SAMPLES: 3s S Split Spoon BORING NO. FOIL204727

Co	nsulting	YORK, ROCHES Geotechnicats ts and Hydro	al Engineer	s,		TEST BORING REPORT		BORING NO. B292		
PROJECT: CLIENT: CONTRACT	NIX	H BROS. SMEI ON HARGRAVE RATT-WOLFF,	DEVANS & D		HASE II			FILE NO. 70185-42 SHEET NO. 1 OF 1 LOCATION: See Plan		
I	TEM		CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROC		ELEVATION: 409.50		
TYPE INSIDE D HAMMER W HAMMER F	IAMETER EIGHT	(IN) (LB) (IN)	Auger 4-1/4 	S 1-3/8 140 30		RIG TYPE: Mobile B-56, truc BIT TYPE: DRILL MUD: OTHER: Advanced augers to		DATUM: NGVD START: 22 January 199 FINISH: 22 January 199 DRILLER: B. Waters H&A REP: M. Corrigan		
DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NUMBER & RECOVERY	SAMPLE DEPTH (FT)	STRATA CHANGE (FT)	VISUAL CLASSI	FICATION AN	ID REMARKS		
		3 4 4	S1 14"/24"	0.0		Loose gray-brown silty fine gravel, with metal fragment	SAND, litt s, wet.	le coarse sand, little		
		3			3.5		-FILL-			
5		2 2	s2	5.0		Loose yellow-brown fine SAN	D, trace me	edium sand, wet.		
		2 2	12"/24"	7.0		-L	ACUSTRINE-			
		2 4 6 7	s3 20"/24"	10.0		Loose yellow-brown silty fi	ne SAND, we	et.		
							ACUSTRINE- Boring at 1	13.0 ft.		
 15				-		Notes:				
						1. Installed monitoring we	ell in compl	leted borehole.		
						2. See Overburden Observat	ion Well Re	eport.		
— 20 — -										
								,		
— 25 —						CAMPLE ADENTALISATION		SUMMARY		
		WATER LEVEL				SAMPLE IDENTIFICATION	OVERBURDE	IRDEN (LIN FT): 13.0 ft.		
DATE	TIME	ELAPSED TIME (HR)	BOTTOM OF CASING	BOTTOM OF HOLE	WATER	O Open End Rod I Thin Wall Tube U Undisturbed Sample	ROCK CORE	D (LIN FT):		
1/21/91 1/22/91	1145 0910	21 hr.	12.16 ft. 12.16 ft.	13.0 ft. 13.0 ft.	9.98 ft.	- S Split Spoon	SAMPLES: BORING NO			

H&A OF NEW YORK, ROCHESTER, NEW YORK Consulting Geotechnical Engineers, TEST BORING REPORT BORING NO. B293 Geologists and Hydrogeologists ROTH BROS. SMELTING CORPORATION - PHASE II PROJECT: FILE NO. 70185-42 NIXON HARGRAVE DEVANS & DOYLE CLIENT: SHEET NO. 1 OF 1 CONTRACTOR: PARRATT-WOLFF, INC. LOCATION: See Plan DRIVE CORE DRILLING EQUIPMENT & PROCEDURES ITEM CASING SAMPLER BARREL ELEVATION: 407.47 RIG TYPE: ATV, track-mounted DATUM: NGVD TYPE Auger S BIT TYPE: ---START: 22 January 1991 4-1/4 1-3/8 INSIDE DIAMETER (IN) DRILL MUD: ---FINISH: 22 January 1991 HAMMER WEIGHT (LB) ---140 ---OTHER: Advanced augers to 13.0 ft. DRILLER: B. Waters HAMMER FALL ---30 ---H&A REP: M. Corrigan (IN) CASING SAMPLER DEPTH SAMPLE SAMPLE STRATA BLOWS DEPTH CHANGE BLOWS NUMBER & VISUAL CLASSIFICATION AND REMARKS (FT) PER FT PER 6 IN RECOVERY (FT) (FT) HOM 0.0 Very loose brown fine SAND, some coarse sand, some gravel, wet. WOH 1"/24" 2.0 1 2 -LACUSTRINE-3 5.0 s2 Stiff brown clayey fine SAND, moist. 5 6 21"/24" 7.0 -LACUSTRINE-10 3 ho.o Medium dense brown SILT, with medium to fine sand layer at 4 11.8 ft., wet. 8 18"/24" 12.0 8 -LACUSTRINE-Bottom of boring at 13.0 ft. 15 Notes: Installed monitoring well in completed borehole. 2. See Overburden Observation Well Report. 20 - 25 -WATER LEVEL DATA SAMPLE IDENTIFICATION SUMMARY DEPTH (FT) TO: OVERBURDEN (LIN FT): 13.0 ft. DATE TIME ELAPSED 0 Open End Rod WATER TIME (HR) BOTTOM BOTTOM Thin Wall Tube ROCK CORED (LIN FT): ---OF HOLE OF CASING U Undisturbed Sample SAMPLES: 3s S Split Spoon **B293** <u>FOIL 20</u>4720 BORING NO.

APPENDIX B Test Pit Reports



H&A OF NEW YORK, ROCHESTER, NEW YORK TEST PIT NO. 201 Consulting Geotechnical Engineers, TEST PIT REPORT Geologists and Hydrogeologists FILE NO. 70185-42 PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II LOCATION: See Plan OCATION: CLIENT: NIXON HARGRAVE DEVANS & DOYLE **ELEVATION:** CONTRACTOR: PARATT-WOLFF, INC. EXPLORATION DATE: 2 Nov. 1990 EQUIPMENT USED: CASE 580K EXTENDAHOE H&A REP.: W. Lanik SAMPLE SCALE DEPTH BAMPLE STRATA DESCRIPTION OF MATERIALS IN REMARKS NUMBER RANGE CHANGE FEET Dark brown sandy SILT, trace gravel, with wood fragments and metal. -FILL-1.5 1.5 J1 -ASH- (J1) - 2 2.5 2.5 J2 2.5-3.0 Dark brown organic Noted ammonia smell in SILT (DITCH). pit. Light brown interbedded fine SAND and SILT. -LACUSTRINE--8 -Bottom of Exploration from 4.0 to 8.0 ft. - 10 -—Length of Trench **3**5 ft. — South North - 12 -WATER LEVEL APPROXIMATE PIT DIMENSIONS AT SURFACE SUMMARY DATE TIME* 4-8 ft. DEPTH FT DEPTH: LENGTH 35.0 feet WIDTH 3.0 feet 11/02/90 1.0 5.0 JAR SAMPLES: **BOULDERS** BAG SAMPLES: 5.0 ft. 8" to 18" DIAMETER: No. = Vol. cu ft WATER LEVEL: * Hrs after completed Over 18" DIAMETER: No. = Vol. cu ft TEST PIT PITE NOL 20473201

H&A OF NEW YORK, ROCHESTER, NEW YORK TEST PIT NO. 202 Consulting Geotechnical Engineers, TEST PIT REPORT Geologists and Hydrogeologists FILE NO. 70185-42 PROJECT: ROTH BROS. SMELTING CORPORATION - PHASE II LOCATION: See Plan LOCATION: NIXON HARGRAVE DEVANS & DOYLE CLIENT: ELEVATION: CONTRACTOR: PARATT-WOLFF, INC. EXPLORATION DATE: 2 Nov. 1990 EQUIPMENT USED: CASE 580K EXTENDAHOE H&A REP.: W. Lanik SAMPLE SCALE SAMPLE DEPTH DESCRIPTION OF MATERIALS IN STRATA REMARKS FEET NUMBER RANGE CHANGE Dark brown sandy SILT, trace gravel, with wood fragments, brick pieces, and scrap metal. -FILL--2 -2.5-3.0 J1 3.0 DITCH (?) 3.5 -LACUSTRINE-Light brown fine SAND. Bottom of Exploration from 4.0 to 6.0 ft. - 10 -Length of Trench 20 ft. -- 12 · WATER LEVEL SUMMARY APPROXIMATE PIT DIMENSIONS AT SURFACE DEPTH FT 4-6 ft. DATE TIME* DEPTH: LENGTH 20.0 feet WIDTH 3.0 feet 11/02/90 4.5 JAR SAMPLES: 1.0 **BOULDERS** BAG SAMPLES: 8" to 18" DIAMETER: No. = Vol. cu ft WATER LEVEL: 4.5 ft. Over 18" DIAMETER: No. cu ft * Hrs after completed = Vol. TEST PIT NO.

APPENDIX C

Observation Well Reports and Groundwater Level Monitoring Reports



OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR: DRILLER: PARRATT-WOLFF, INC.

D. RICHMOND

RIG TYPE:

INSTALLATION DATE: 31 OCTOBER 1990

FILE NO.: 70185-42
WELL NO.: B273-0W

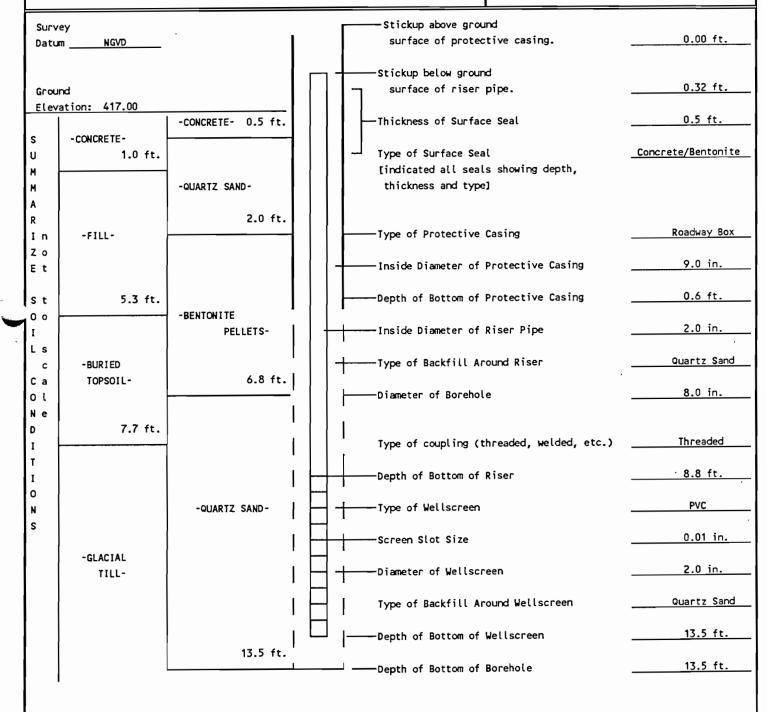
WELL NO.: I

See Plan

SHEET:

1 OF 2

INSPECTOR: W. Lanik



Remarks:

Well No. B273-OW FQIL204734

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: 8273-OW

GROUND/TOP OF CASING ELEVATION: 417.00/416.68 ft.

FILE NO. 70185-42 PAGE NO. 2

			and the second s			
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/01/90	1245	1 day	3.51 ft.	413.17 ft.	Time from installation.	WL.
11/05/90	1130	4 days	3.26 ft.	413.42 ft.	-	WL.
11/07/90	1120	2 days	3.36 ft.	413.32 ft.	Prior to development (dev. 1 hr./9 gal.)	¥L
11/09/90	0840	2 days	3.46 ft.	413.22 ft.	-	WL.
1/24/91	1100	77 days	3.52 ft.	413.16 ft.		MJC
						,
		_				
					FOIL204735	

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR:

PARRATT-WOLFF, INC.

DRILLER:

D. RICHMOND

RIG TYPE:

INSTALLATION DATE: 1 NOVEMBER 199

FILE NO .:

70185-42

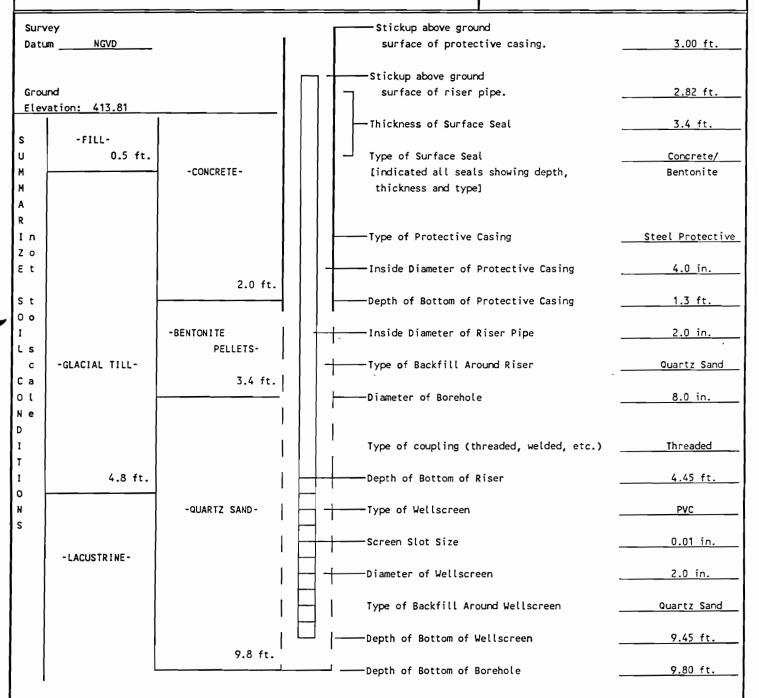
WELL NO .: LOCATION: B277-0W See Plan

SHEET:

1 OF 2

INSPECTOR:

W. Lanik



Remarks:

FOINE 04788. B277-OW

GROUNDWATER LEVEL MONITORING REPORT

FOIL204737

FILE NO. 70185-42 WELL NUMBER: B277-OW GROUND/TOP OF CASING ELEVATION: 413.81/416.63 ft. PAGE NO. 2 ELAPSED DEPTH OF WATER ELEVATION READ DATE TIME TIME FROM T.O.R. OF WATER REMARKS BY 11/01/90 1200 3 hrs. 7.10 ft. 409.53 ft. Time from installation. WL 7.40 ft. 11/06/90 1100 5 days 409.23 ft. Prior to development WL (dev. 1.0 hrs./12 gal.) 11/06/90 1230 1.5 hrs. 7.46 ft. 409.17 ft. WL 7.18 ft. 11/07/90 1100 1 day 409.45 ft. WL 7.42 ft. 1/24/91 1045 79 days 409.21 ft. MJC

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR: DRILLER: PARRATT-WOLFF, INC.

· .

INSTALLATION DATE: 1-2 NOVEMBER 1990

D. RICHMOND RIG TYPE:

FILE NO.:

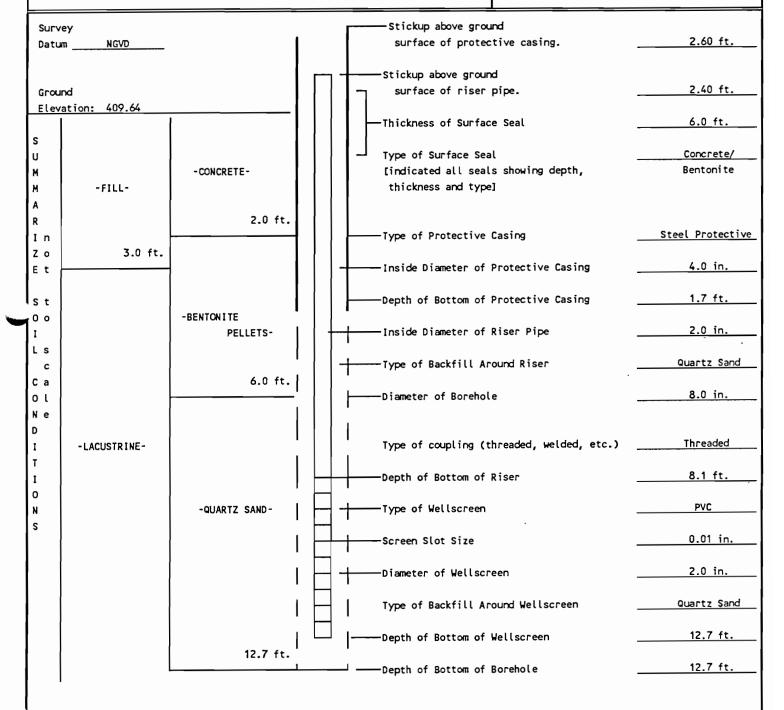
70185-42

WELL NO.: LOCATION: B278-OW See Plan

SHEET:

1 OF 2

INSPECTOR: W. Lanik



Remarks:

FOIL204738 B278-ON

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: B278-OW

GROUND/TOP OF CASING ELEVATION: 409.64/412.04

FILE NO. 70185-42

PAGE NO. 2

WELL NUMBER: B2/8-OW		GROC	IND/TOP OF CASING ELEVATION:	PAGE NO. 2		
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/02/90	1400	5 hrs.	5.44 ft.	406.60	time from installation	WL
11/06/90	1115	4 days	5.31 ft.	406.73	prior to development (dev. 1.0 hrs./12 gal.)	WL
11/07/90	1107	1 day	5.36 ft.	406.68		WL
1/24/91	1000	79 days	5.45 ft.	406.59		MJC
			•			
						,
					FOIL204739	

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR:

PARRATT-WOLFF, INC.

DRILLER:

D. RICHMOND

RIG TYPE:

INSTALLATION DATE: 1 NOVEMBER 1990

FILE NO.: 70185-42
WELL NO.: B279-0W

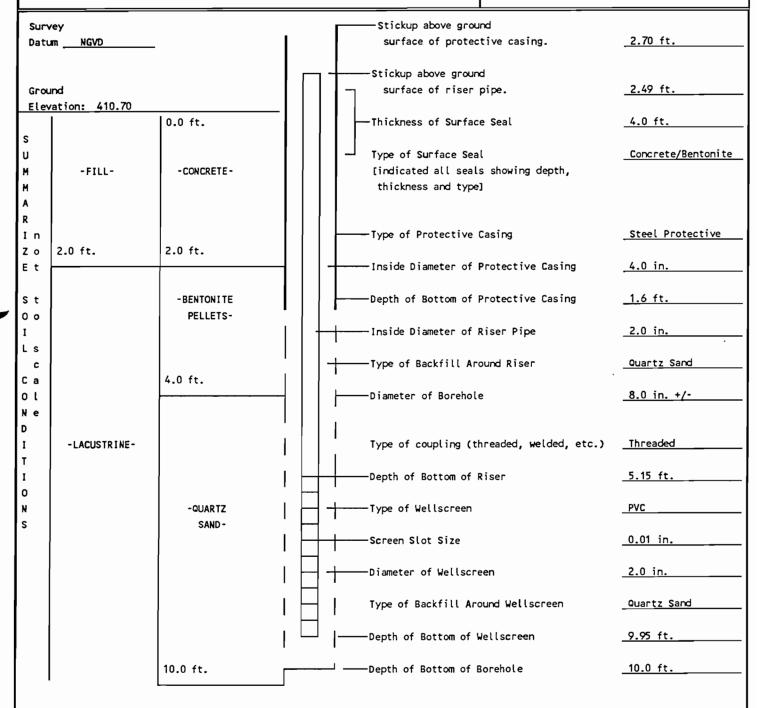
LOCATION:

B279-OW See Plan

SHEET:

1 OF 2

INSPECTOR: W. Lanik



Remarks:

FOIL 120 4740 . 8279-04

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER:	B279-0W		GR CX.	JND/TOP OF CASING ELEVATION:	410.70/413.19	FILE NO. 70185-42 PAGE NO. 2	
DATE	TIME	ELAPS TIME		DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/02/90	0800	17 hrs	•	7.14 ft.	406.05	Time from installation	WL
11/02/90	0820	20 min	-	6.70 ft.	406.49		WL
11/02/90	1645	8 hrs	•	6.24 ft.	406.95		¥L
11/06/90	1130	4 day	rs	6.24 ft.	406.95	Prior to development (dev. 1.0 hr./8 gal.)	WL
11/07/90	1109	1 day	,	6.14 ft.	407.05		WL
1/24/91	0900	79 day	s	5.61 ft.	407.58		MJC
			·				
						·	
							,
						FOIL204741	

H&A OF NEW YORK

CONSULTING GEOTECHNICAL ENGINEERS OVERBURDEN GROUNDWATER MONITORING WELL REPORT GEOLOGISTS AND HYDROGEOLOGISTS 70185-42 FILE NO .: ROTH BROS. SMELTING CORPORATION - PHASE II PROJECT: WELL NO .: B280-0W EAST SYRACUSE, NEW YORK LOCATION: NIXON HARGRAVE DEVANS & DOYLE LOCATION: See Plan CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. SHEET: 1 OF 2 D. RICHMOND RIG TYPE: DRILLER: INSPECTOR: W. Lanik INSTALLATION DATE: 1 NOVEMBER 1990 Stickup above ground Survey 3.00 ft. surface of protective casing. Datum NGVD -Stickup above ground surface of riser pipe. 2.80 ft. Ground Elevation: 407.21 0.0 ft. -Thickness of Surface Seal 4.0 ft. S Type of Surface Seal Concrete/Bentonite U -FILL-[indicated all seals showing depth, М thickness and type] М 1.0 ft. -CONCRETE-R Type of Protective Casing Steel Protective I n Ζo 4.0 in. -Inside Diameter of Protective Casing Εt BURIED -TOPSOIL-Depth of Bottom of Protective Casing 1.3 ft. 2.0 ft. s t 0 0 2.2 ft. 2.0 in. -Inside Diameter of Riser Pipe -BENTONITE Ls С

PELLETS-Type of Backfill Around Riser Quartz Sand 4.0 ft. 8.0 in. +/-Diameter of Borehole Type of coupling (threaded, welded, etc.) Threaded 5.72 ft. -Depth of Bottom of Riser -LACUSTRINE--Type of Wellscreen PVC -QUARTZ SAND-0.01 in. Screen Slot Size -Diameter of Wellscreen 2.0 in. Type of Backfill Around Wellscreen Quartz Sand -Depth of Bottom of Wellscreen 9.72 ft. 10.0 ft. 10.0 ft. → Depth of Bottom of Borehole

Remarks:

Са

οl Nе D

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Well No. B280-OW

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42 WELL NUMBER: B280-OW GROUND/TOP OF CASING ELEVATION: 407.21/410.01 PAGE NO. 2 ELAPSED DEPTH OF WATER ELEVATION READ TIME TIME OF WATER DATE FROM T.O.R. REMARKS BY 11/01/90 1400 2 hrs. 4.20 ft. 405.81 Time from installation WL 0830 11/05/90 4 days 4.39 ft. 405.62 WL 11/06/90 1150 4.01 ft. 406.00 Prior to development 1 day WL (dev. 1.0 hrs./17 gal.) 11/07/90 1111 4.17 ft. 405.84 1 day WL 1/24/91 0800 79 days 4.09 ft. 405.92 MJC FOIL204743

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

FOIL 204749 B281-OW

ROTH BROS. SMELTING CORPORATION - PHASE II FILE NO .: 70185-42 PROJECT: LOCATION: EAST SYRACUSE, NEW YORK WELL NO .: B281-0W NIXON HARGRAVE DEVANS & DOYLE LOCATION: See Plan CLIENT: CONTRACTOR: PARRATT-WOLFF, INC. DRILLER: D. RICHMOND RIG TYPE: SHEET: 1 OF 2 INSTALLATION DATE: 5 NOVEMBER 1990 INSPECTOR: W. Lanik Stickup above ground Survey _3.32 ft. Datum NGVD surface of protective casing. -Stickup above ground 3.10 ft. surface of riser pipe. Ground Elevation: 420.13 0.0 ft. -Thickness of Surface Seal 4.0 ft. s U Type of Surface Seal Concrete/Bentonite [indicated all seals showing depth, М -FILL--CONCRETEthickness and type] М Α R Steel Protective -Type of Protective Casing Ιn Ζo 4.0 in. E t -Inside Diameter of Protective Casing 2.0 ft. St 2.2 ft. Depth of Bottom of Protective Casing 1.0 ft. -BENTONITE 0 0 2.0 in. PELLETS--Inside Diameter of Riser Pipe Ls 4.0 ft. -Type of Backfill Around Riser Quartz Sand С Са -Diameter of Borehole 8.0 in. +/οι Nе D Type of coupling (threaded, welded, etc.) Threaded I Т 4.80 ft. I -GLACIAL -Depth of Bottom of Riser 0 TILL--QUARTZ PVC N SAND --Type of Wellscreen S 0.01 in. -Screen Slot Size -Diameter of Wellscreen 2.0 in. Type of Backfill Around Wellscreen Quartz Sand Depth of Bottom of Wellscreen 9.90 ft. 10.0 ft. 10.0 ft. -Depth of Bottom of Borehole Remarks:

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBE	R: B281-OW		GROU	UND/TOP OF CASING ELEVATION:	420.13/423.23	FILE NO. 70185-42 PAGE NO. 2	
DATE	TIME	ELAPS TIME		DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/06/90	1015	1 da	У	3.20 ft.		Time from installation prior to development. (dev. 1.0 hr/19 gal)	WL
11/06/90	1500	5 hr	s.	5.40 ft.	417.83		WL
11/07/90	1145	1 da	У	3.68 ft.	419.55		WL
1/24/91	0845	79 da	ys	4.45 ft.	418.78		MJC
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						FOIL204745	

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR: DRILLER:

PARRATT-WOLFF, INC.

D. RICHMOND

RIG TYPE:

INSTALLATION DATE: 5 NOVEMBER 1990

FILE NO.: 70185-42

WELL NO .:

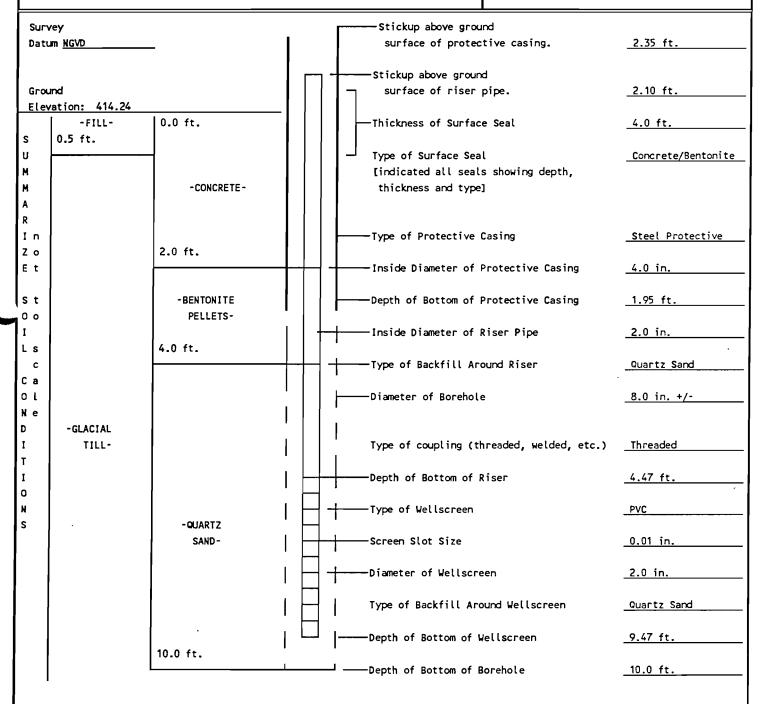
B286-0W

LOCATION:

See Plan

SHEET:

1 OF 2 INSPECTOR: W. Lanik



Remarks:

Well No. B286-OW

GROUNDWATER LEVEL MONITORING REPORT

FOIL204747

FILE NO. 70185-42 WELL NUMBER: B286-OW GROUND/TOP OF CASING ELEVATION: 414.24/416.34 PAGE NO. 2 **ELAPSED** DEPTH OF WATER ELEVATION READ OF WATER TIME DATE TIME FROM T.O.R. REMARKS BY ---11/05/90 1500 Installation completed WL Dry 1055 9.90 ft. 406.44 WL 11/07/90 2 days Prior to development (dev. 1/2 hrs/1.5 gal-dry) 11/09/90 1440 2 days 10.15 ft. 406.19 WL 1/24/91 0915 77 days 4.45 ft. 411.89 MJC

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORPORATION - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON HARGRAVE DEVANS & DOYLE

CONTRACTOR:

PARRATT-WOLFF, INC.

DRILLER:

D. RICHMOND

RIG TYPE:

INSTALLATION DATE: 2 NOVEMBER 1990

FILE NO.: 70185-42 WELL NO.: B287-OW

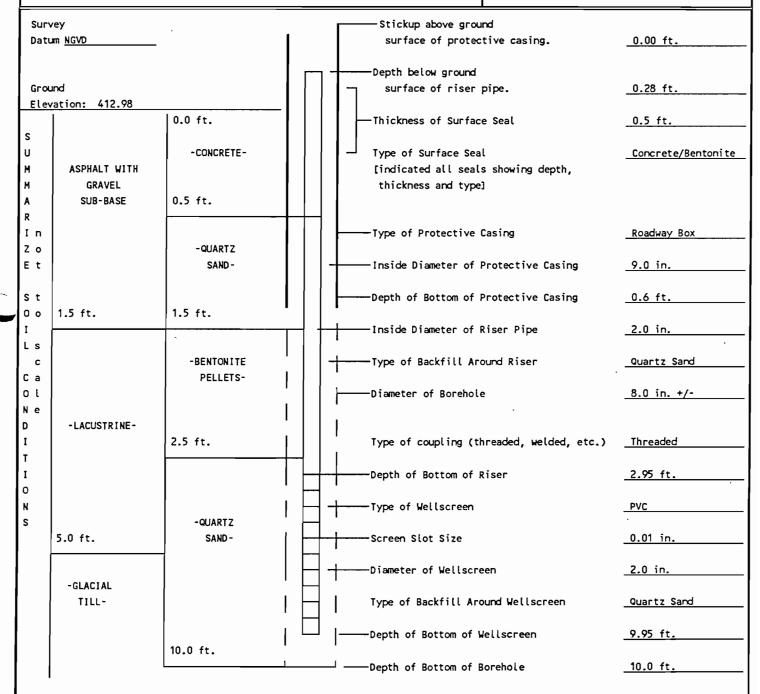
LOCATION:

See Plan

SHEET:

1 OF 2

INSPECTOR: W. Lanik



Remarks:

Well No. B287-OW

1II 204748

GROUNDWATER LEVEL MONITORING REPORT

WELL	NUMBER: B287-O	ı	GROUND/TOP OF CASING ELEVATION	DN: 419.98/412.70	FILE NO. 70185-42 PAGE NO. 2	
DATE	TIME	ELAPSE TIME	D DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/02/	790 1300	1 hr.	Dry		Time from installation	WL
11/05/	790 1000	3 days	0.40 ft.	412.30		WL
11/06/	790 1030	1 day	0.20 ft.	412.50	Prior to development (dev. 4 gal/0.25 hrsclean)	WL
11/07/	90 1040	1 day	0.62 ft.	412.08		₩L
11/08/	90 1350	1 day	0.66 ft.	412.04		WL
1/24/	91 1015	78 days	1.87 ft.	410.83		MJC
						,
					FOIL204749	

H&A OF NEW YORK CONSULTING GEOTECHNICAL ENGINEERS OVERBURDEN GROUNDWATER MONITORING WELL REPORT GEOLOGISTS AND HYDROGEOLOGISTS FILE NO .: 70185-42 ROTH BROS. SMELTING CORPORATION - PHASE II PROJECT: LOCATION: EAST SYRACUSE, NEW YORK WELL NO .: B290-0W LOCATION: See Plan NIXON HARGRAVE DEVANS & DOYLE CLIENT: PARRATT-WOLFF, INC. CONTRACTOR: 1 OF 2 SHEET: DRILLER: D. RICHMOND RIG TYPE: INSTALLATION DATE: 5-6 NOVEMBER 1990 INSPECTOR: W. Lanik -Stickup above ground Survey 2.90 ft. surface of protective casing. Datum NGVD -Stickup above ground 2.80 ft. Ground surface of riser pipe. Elevation: 411.70 -Thickness of Surface Seal 1.5 ft. 0.0 ft. s -CONCRETE-Type of Surface Seal Concrete/Bentonite U [indicated all seals showing depth, 0.5 ft. М thickness and type] М Α -FILL-R -BENTONITE Steel Protective -Type of Protective Casing PELLETS-In Ζo 4.0 in. 1.5 ft. -Inside Diameter of Protective Casing Εt 1.4 in. -Depth of Bottom of Protective Casing S t 0 0 2.3 ft. -- Inside Diameter of Riser Pipe 2.0 in. Ls -Type of Backfill Around Riser Quartz Sand C Са -Diameter of Borehole 8.0 in. +/--LACUSTRINEοι -QUARTZ Nе D SAND-Type of coupling (threaded, welded, etc.) Threaded I 4.0 ft. T -Depth of Bottom of Riser 1.7 ft. I 0 PVC -Type of Wellscreen N

-Screen Slot Size

-Diameter of Wellscreen

Type of Backfill Around Wellscreen

Depth of Bottom of Wellscreen

-- Depth of Bottom of Borehole

Remarks:

s

-GLACIAL TILL-

10.5 ft.

0.01 in.

2.0 in.

Quartz Sand

10.4 ft.

10.5 ft.__

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBE	R: B290-OW		GROU	ND/TOP OF CASING ELEVATION:	411.70/414.50	FILE NO. 70185-42 PAGE NO. 2	
DATE	TIME	ELAPS TIME		DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY
11/06/90	0900			5.60 ft.	408.90	Installation completed prior to development. (dev. 1 hr/60 gal.)	WL
11/06/90	1000	1 hr.		5.67 ft.	408.83		WL
11/07/90	. 0800	1 day	,	5.70 ft.	408.80		WL
11/09/90	0930	2 day	s	5.72 ft.	408.78	-	WL
1/24/91	0920	77 day	s	5.60 ft.	408.90		MJC
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						-	
						_	
						FOIL204751	

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORP. - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON, HARGRAVE, DEVANS AND DOYLE

CONTRACTOR:

PARRATT-WOLF, INC.

DRILLER:

B. WATERS

RIG TYPE: ATV, TRACK-MOUNTED

INSTALLATION DATE: 22 JANUARY 1991

FILE NO.: 70185-42
WELL NO.: B291-0W

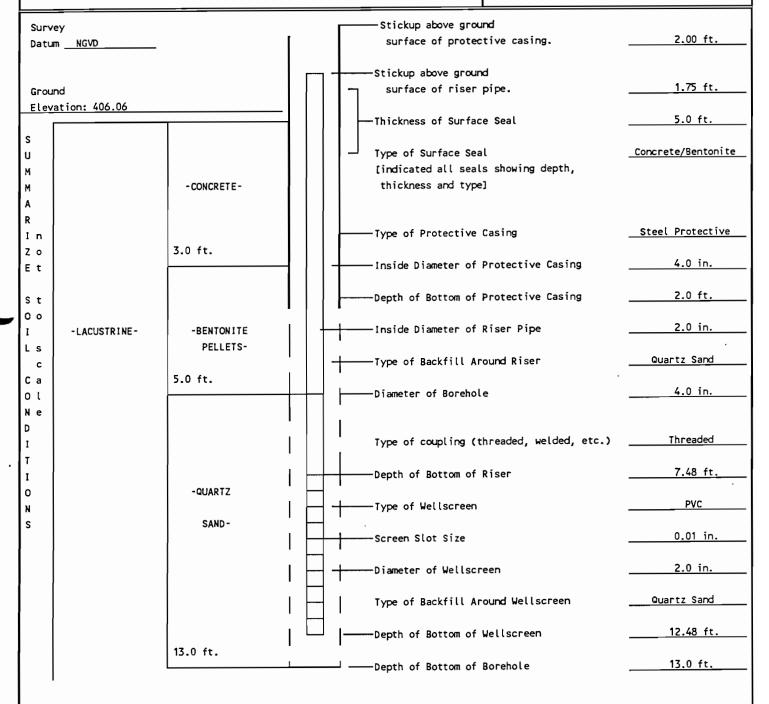
WELL NO.: LOCATION:

SEE PLAN

SHEET:

1 OF 2

H&A REP: M. CORRIGAN



Remarks:

Well No. B291-OW

OL204752

GROUNDWATER LEVEL MONITORING REPORT

FILE NO. 70185-42 WELL NUMBER: 8291-0W GROUND/TOP OF CASING ELEVATION: 407.81 PAGE NO. 2 OF 2 ELAPSED DEPTH OF WATER ELEVATION READ DATE TIME TIME FROM T.O.R. OF WATER REMARKS BY 1/24/91 0900 2 days 2.62 405.19 PVC stickup 1.75 ft. above ground MJC surface.

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORP. - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT: CONTRACTOR: NIXON, HARGRAVE, DEVANS AND DOYLE

DRILLER:

PARRATT-WOLF, INC.

B. WATERS INSTALLATION DATE: 22 JANUARY 1991

RIG TYPE: MOBILE B-56, TRUCK-MOUNTED

B292-0W SEE PLAN

70185-42

SHEET:

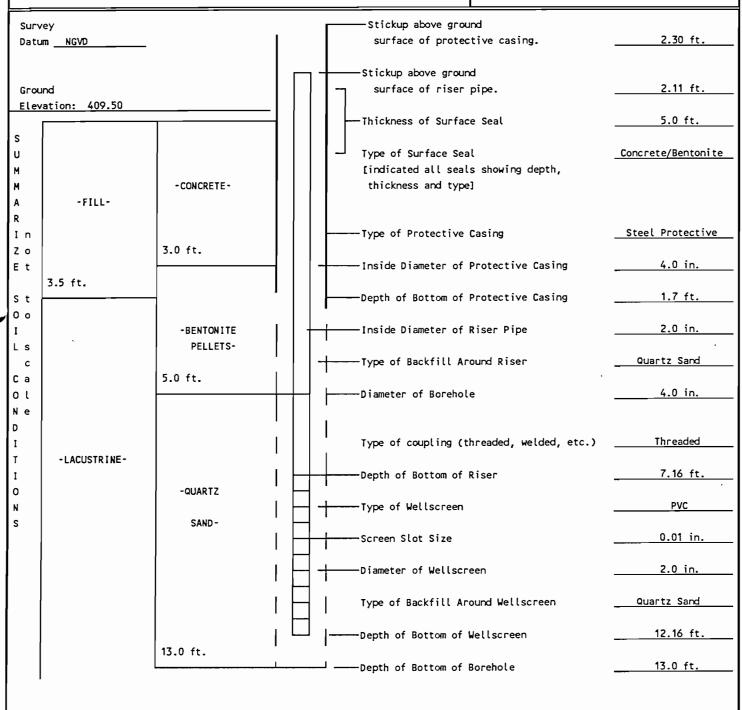
FILE NO.:

WELL NO .:

LOCATION:

1 OF 2

H&A REP: M. CORRIGAN



Remarks:

Well No. B292-OW

GROUNDWATER LEVEL MONITORING REPORT

WELL NUMBER: B292-OW

TOP OF CASING ELEVATION: 411.61

FILE NO. 70185-42 PAGE NO. 2 OF 2

WELL NUMBER: B292-OW			P OF CASING ELEVATION: 411		PAGE NO. 2 OF 2		
DATE	TIME	ELAPSED TIME	DEPTH OF WATER FROM T.O.R.	ELEVATION OF WATER	REMARKS	READ BY	
1/21/91	1145		9.98 ft.	401.63	Riser 2.11 ft. above ground surface	MJC	
1/22/91	0910	21 hr.	5.7 ft.	405.91		MJC	
1/22/91	1315	25 hr.	4.8 ft.	406.81		MJC	
1/24/91	0908	3 days	5.05 ft.	405.56		WJC	
						,	
	_				FOIL204755		

OVERBURDEN GROUNDWATER MONITORING WELL REPORT

PROJECT:

ROTH BROS. SMELTING CORP. - PHASE II

LOCATION:

EAST SYRACUSE, NEW YORK

CLIENT:

NIXON, HARGRAVE, DEVANS AND DOYLE

CONTRACTOR:

PARRATT-WOLF, INC.

DRILLER: B. WATERS

RIG TYPE: ATV, TRACK-MOUNTED

INSTALLATION DATE: 22 JANUARY 1991

FILE NO.: 70185-42

WELL NO .:

B293-0W

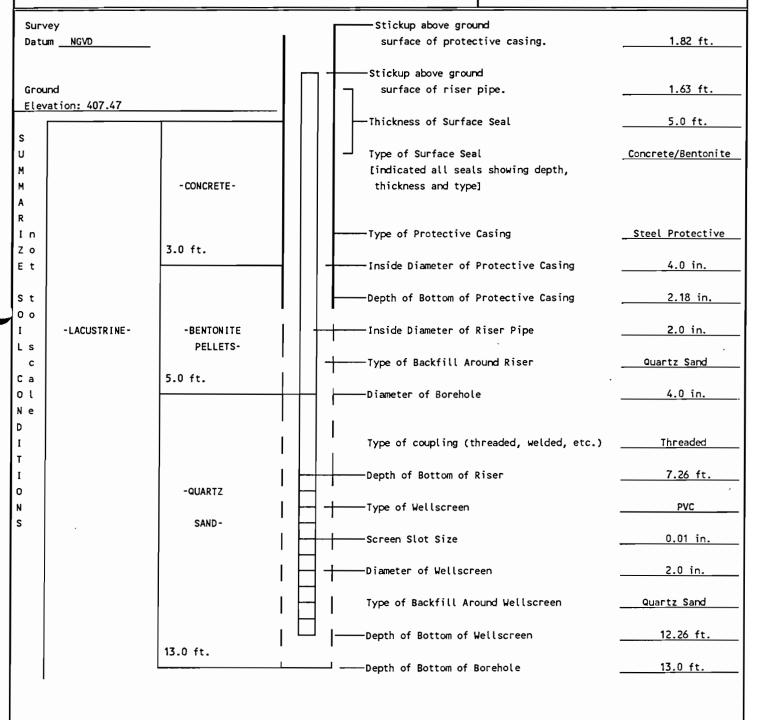
LOCATION:

SEE PLAN

SHEET:

1 OF 2

H&A REP: M. CORRIGAN



Remarks:

Well No. B293-0W

OIL204756

GROUNDWATER LEVEL MONITORING REPORT

FOIL204757

FILE NO. 70185-42 WELL NUMBER: B293-OW TOP OF CASING ELEVATION: 409.10 PAGE NO. 2 OF 2 ELAPSED DEPTH OF WATER ELEVATION READ TIME TIME DATE FROM T.O.R. OF WATER REMARKS BY 404.00 1/24/91 0915 2 days 5.10 ft. PVC stickup 1.63 ft. above MJC ground surface

APPENDIX D Laboratory Analytical Results

